

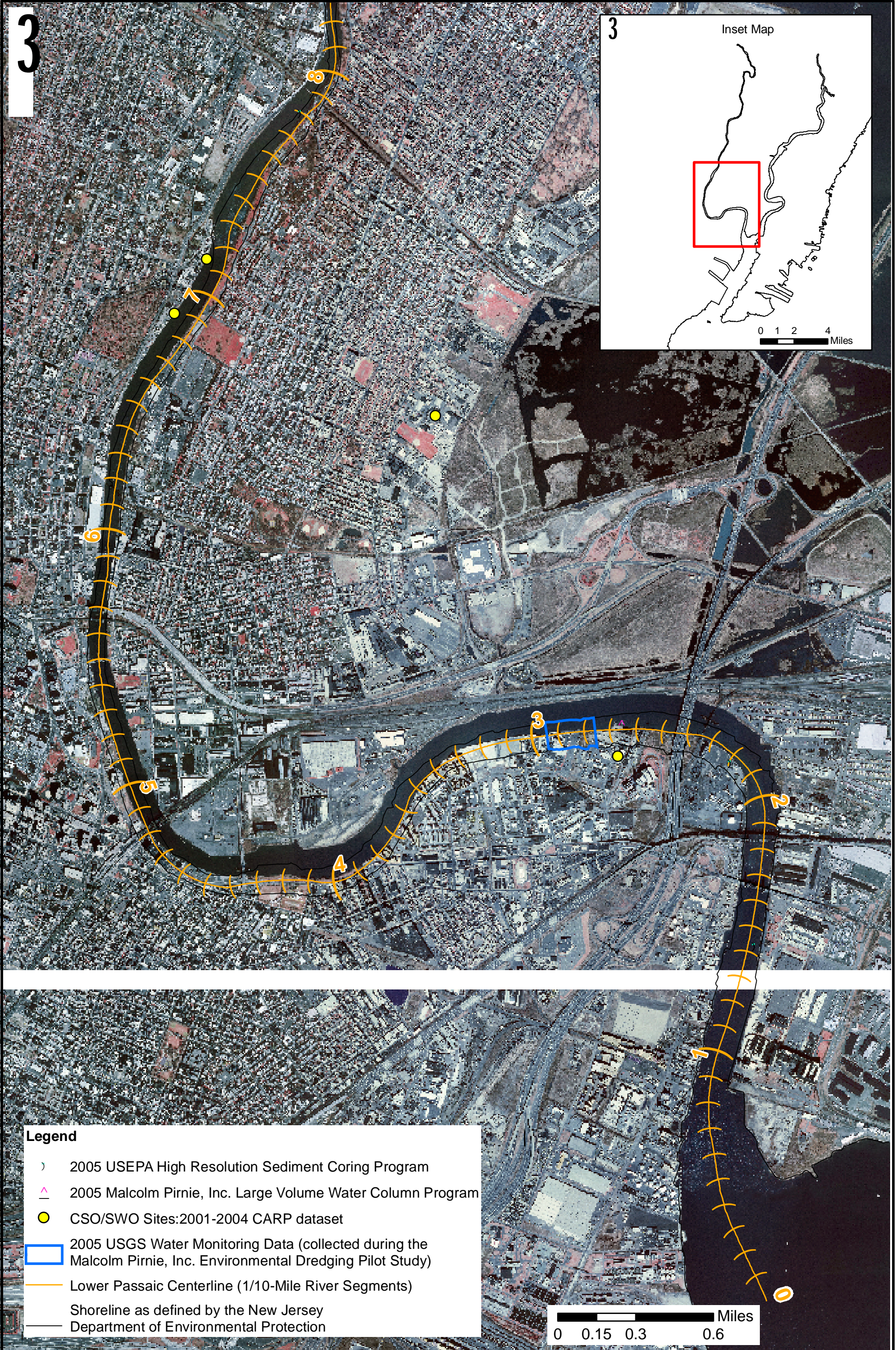
Cesium 137  
Core 29A, RM 11

Lower Passaic River Restoration Project

Figure 13-1

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S:\Projects\PASSAIC\MapDocuments\4553001-CERCLA\Figure4-1a\_MassBalance.mxd - 4/23/2007 @ 7:14:10 PM



## Sampling Locations

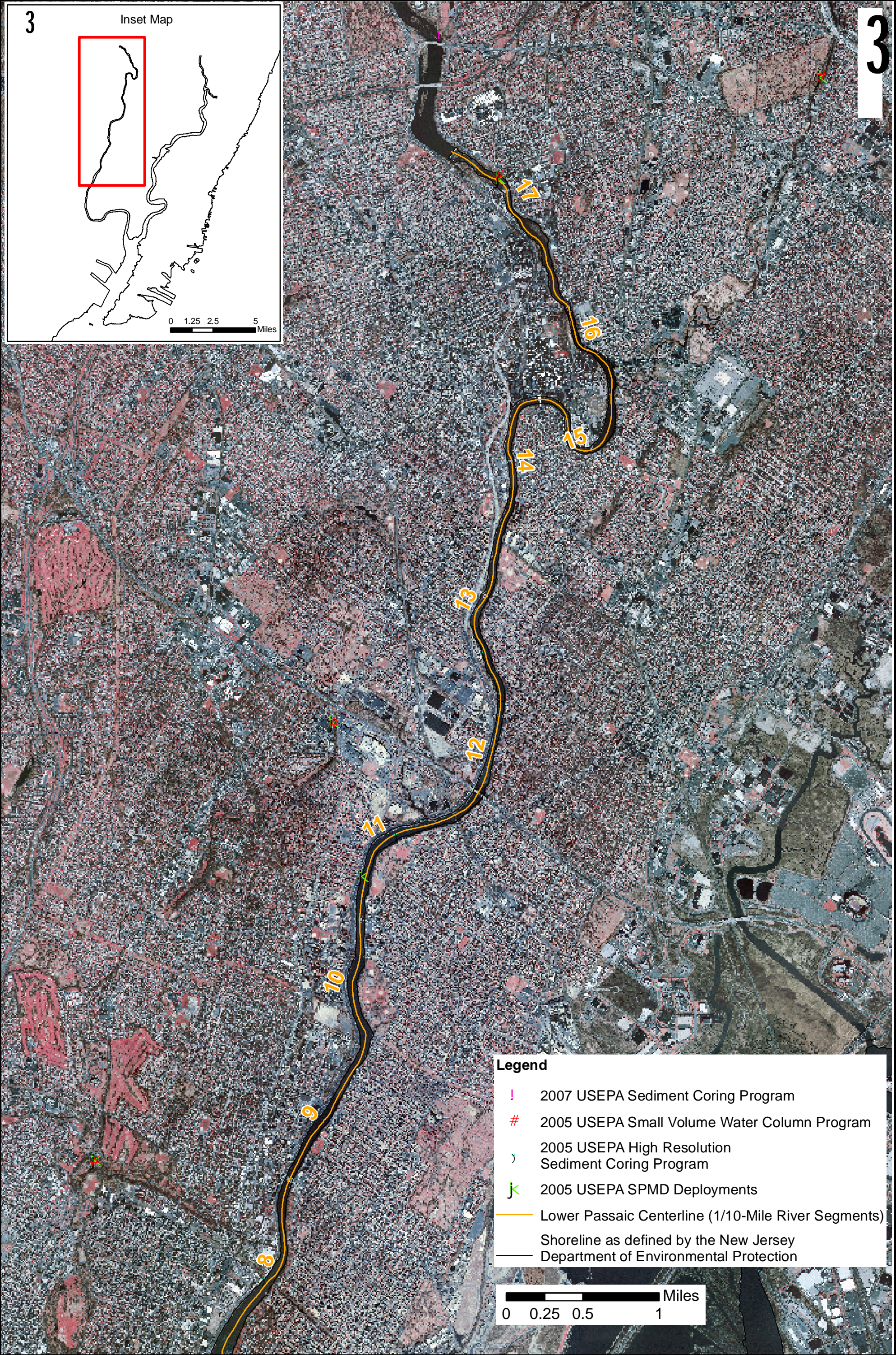
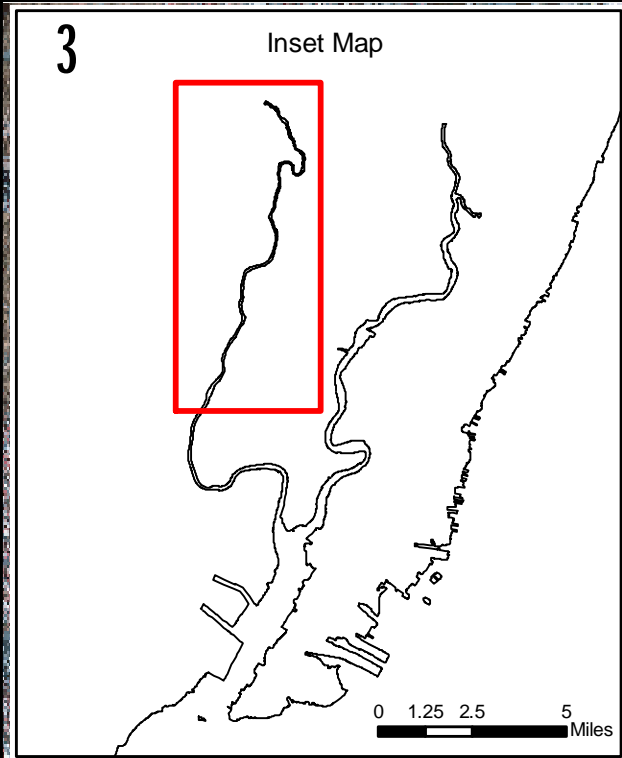
Lower Passaic River Restoration Project

Data Source: 2002 Aerial photographs from the New Jersey State data clearing house (<http://njgin.state.nj.us>).

FIGURE13-2a

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### Sampling Locations

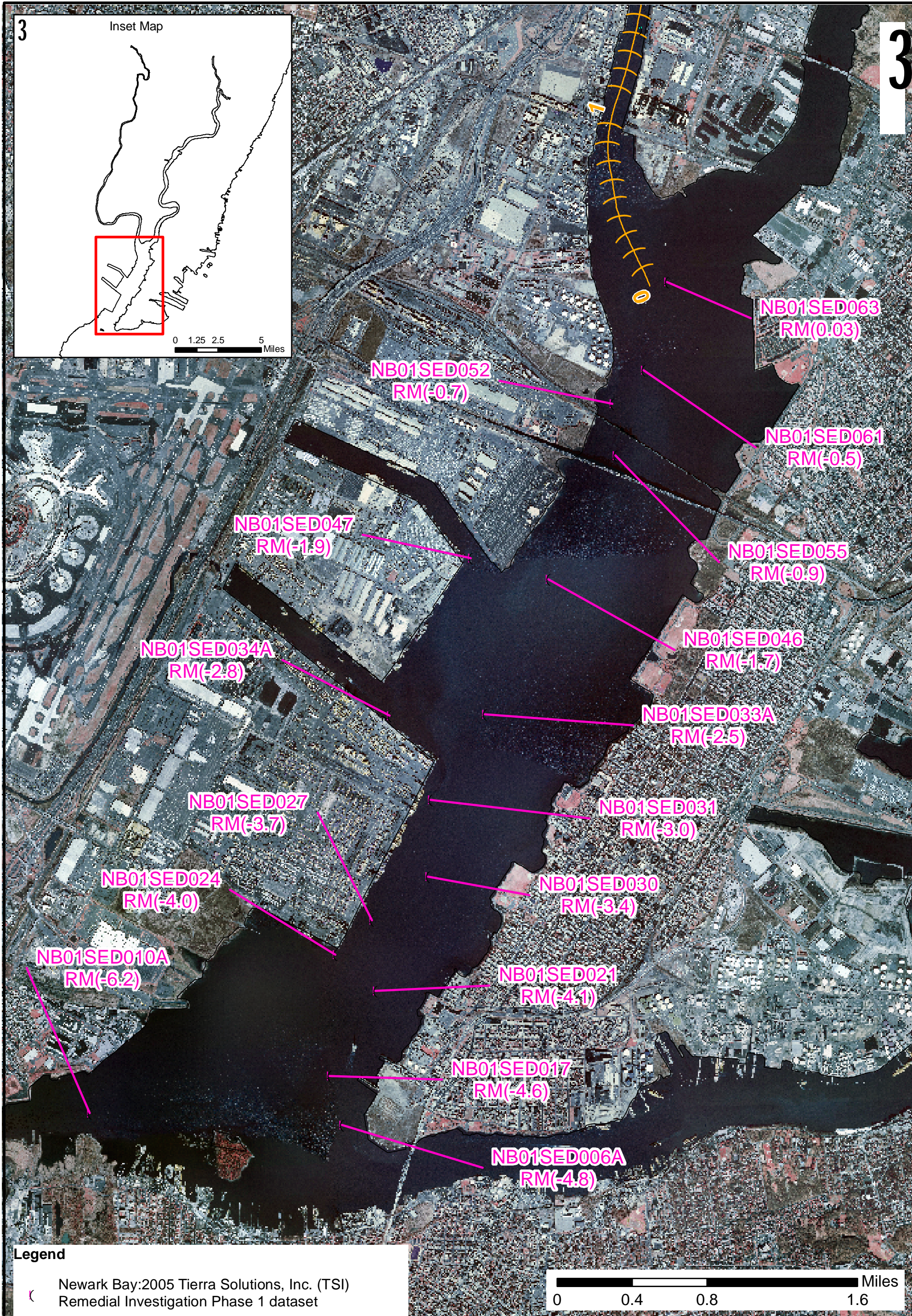
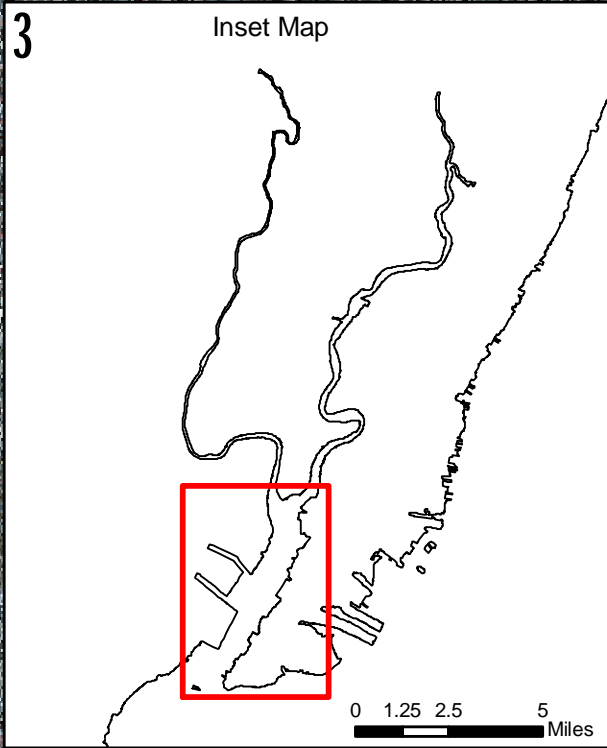
Lower Passaic River Restoration Project

Data Source: 2002 Aerial photographs from the New Jersey State data clearing house (<http://njgin.state.nj.us>).

FIGURE 13-2b

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Note: In this presentation river miles for the Newark Bay sampling locations are assigned with respect to the distance from the mouth of the Lower Passaic River (RM0.0) and following the federal navigation channel.



### Sampling Locations

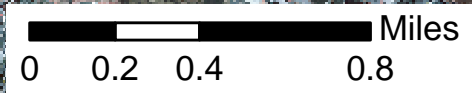
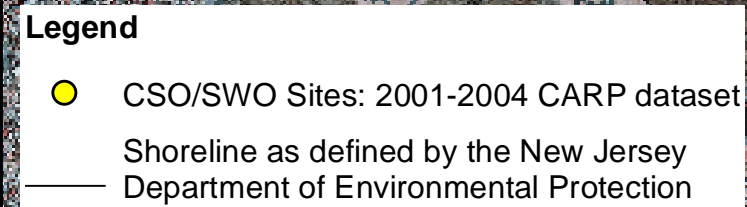
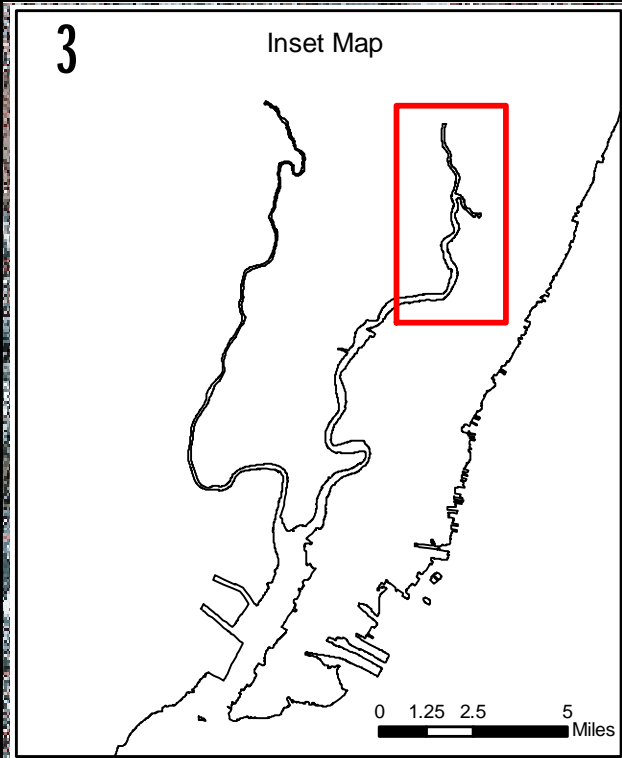
Lower Passaic River Restoration Project

Data Source: 2002 Aerial photographs from the New Jersey State data clearing house (<http://njgin.state.nj.us>).

FIGURE 13-2c

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## Sampling Locations

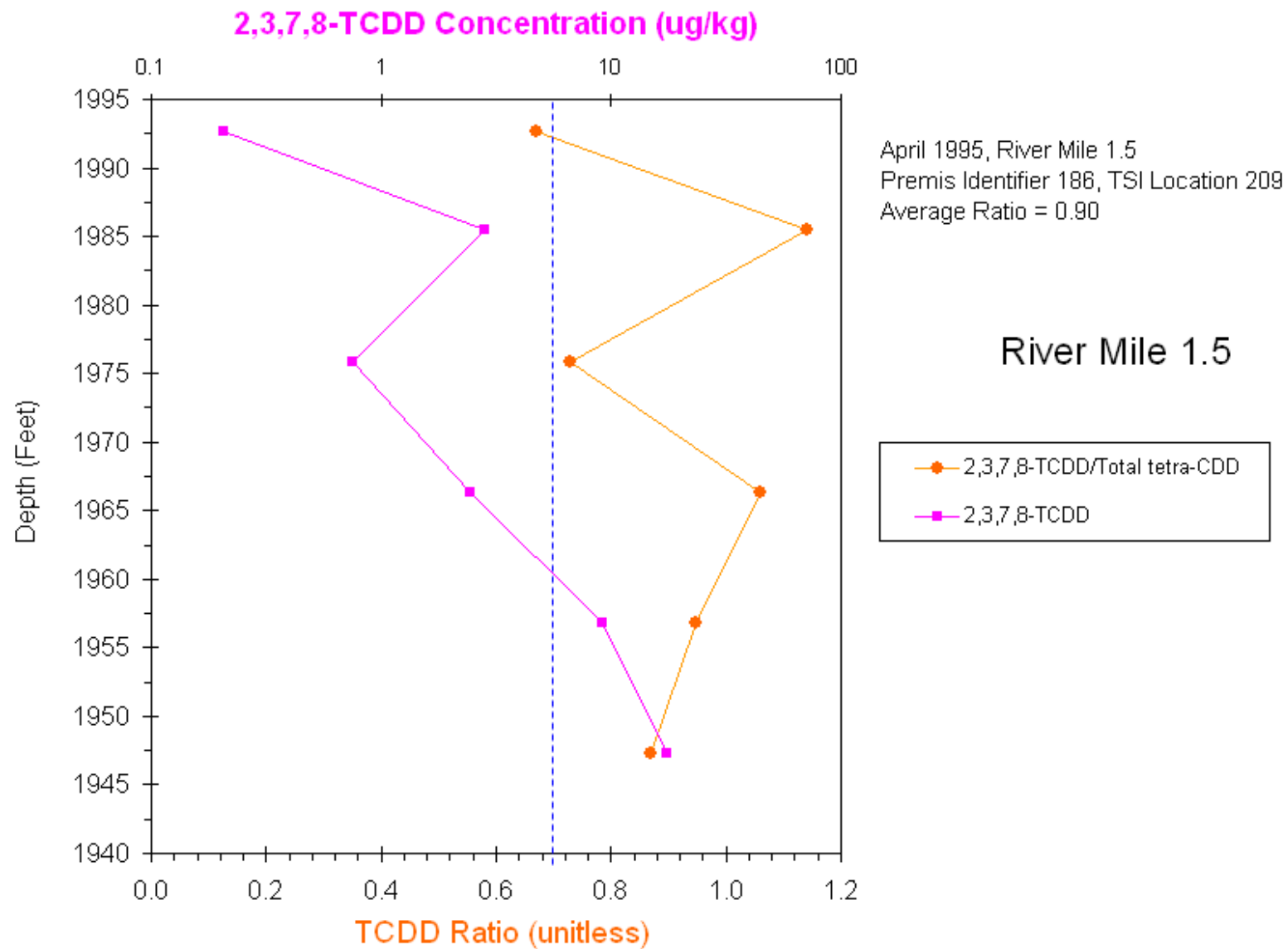
*Lower Passaic River Restoration Project*

Data Source: 2002 Aerial photographs from the New Jersey State data clearing house (<http://njgin.state.nj.us>).

FIGURE 13-2d

September 2008





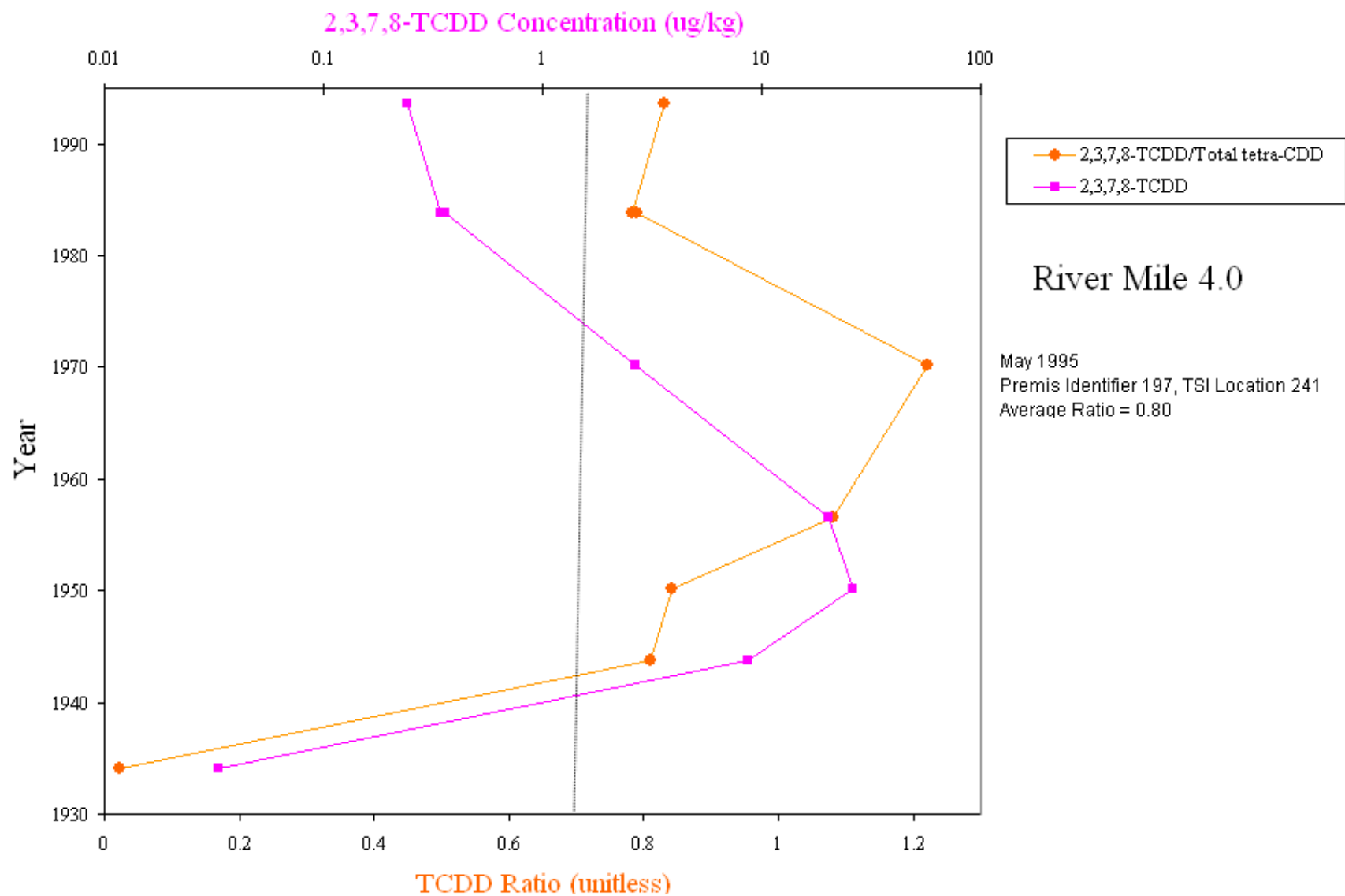
2,3,7,8-TCDD and 2,3,7,8-TCDD/Total TCDD Ratio  
 Comparison (River Mile 1.5)

*Lower Passaic River Restoration Project*

Figure 13-3a

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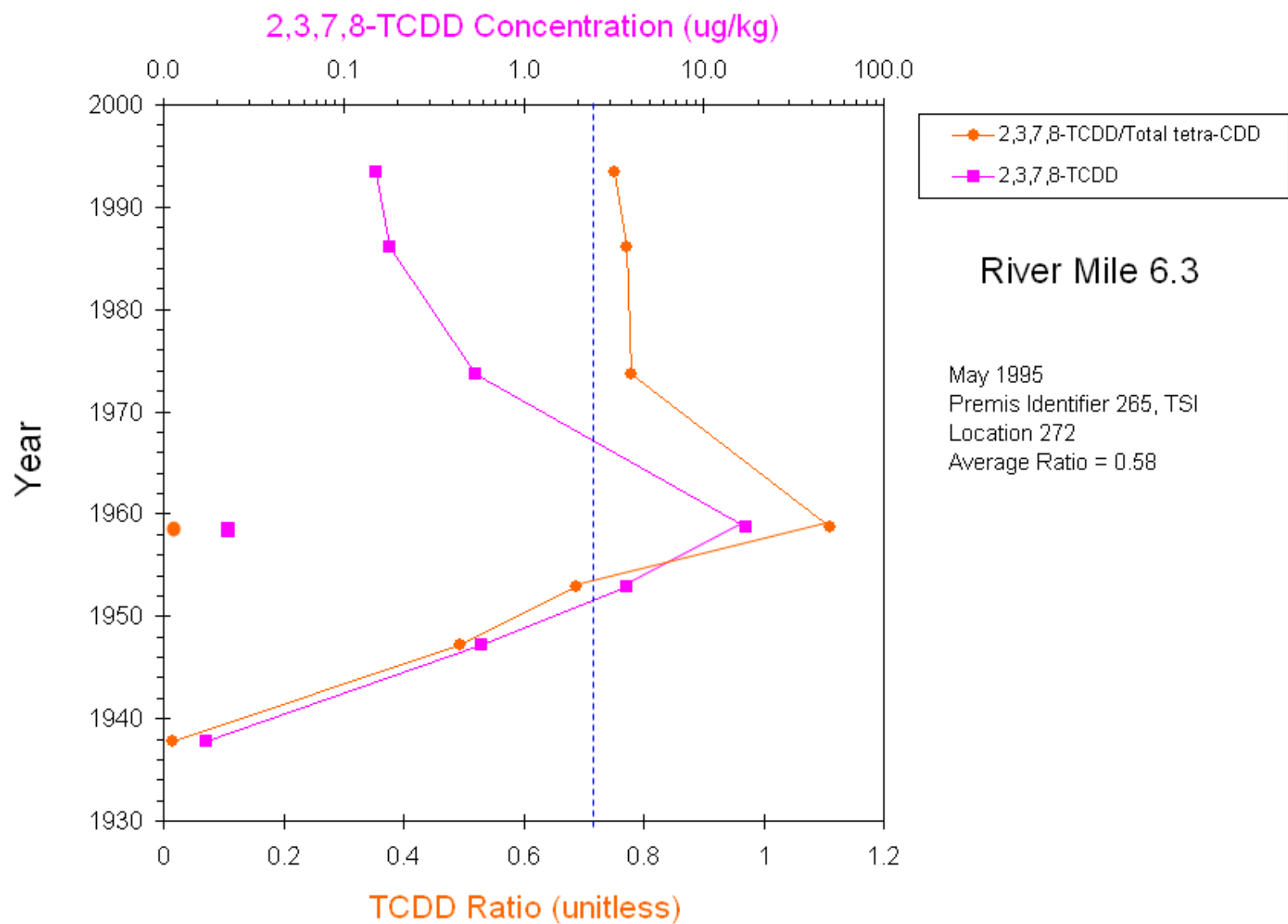
2,3,7,8-TCDD and 2,3,7,8-TCDD/Total TCDD Ratio  
Comparison (River Mile 4.0)

*Lower Passaic River Restoration Project*

Figure 13-3b

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2,3,7,8-TCDD and 2,3,7,8-TCDD/Total TCDD Ratio  
Comparison (River Mile 6.3)

*Lower Passaic River Restoration Project*

Figure 13-3c

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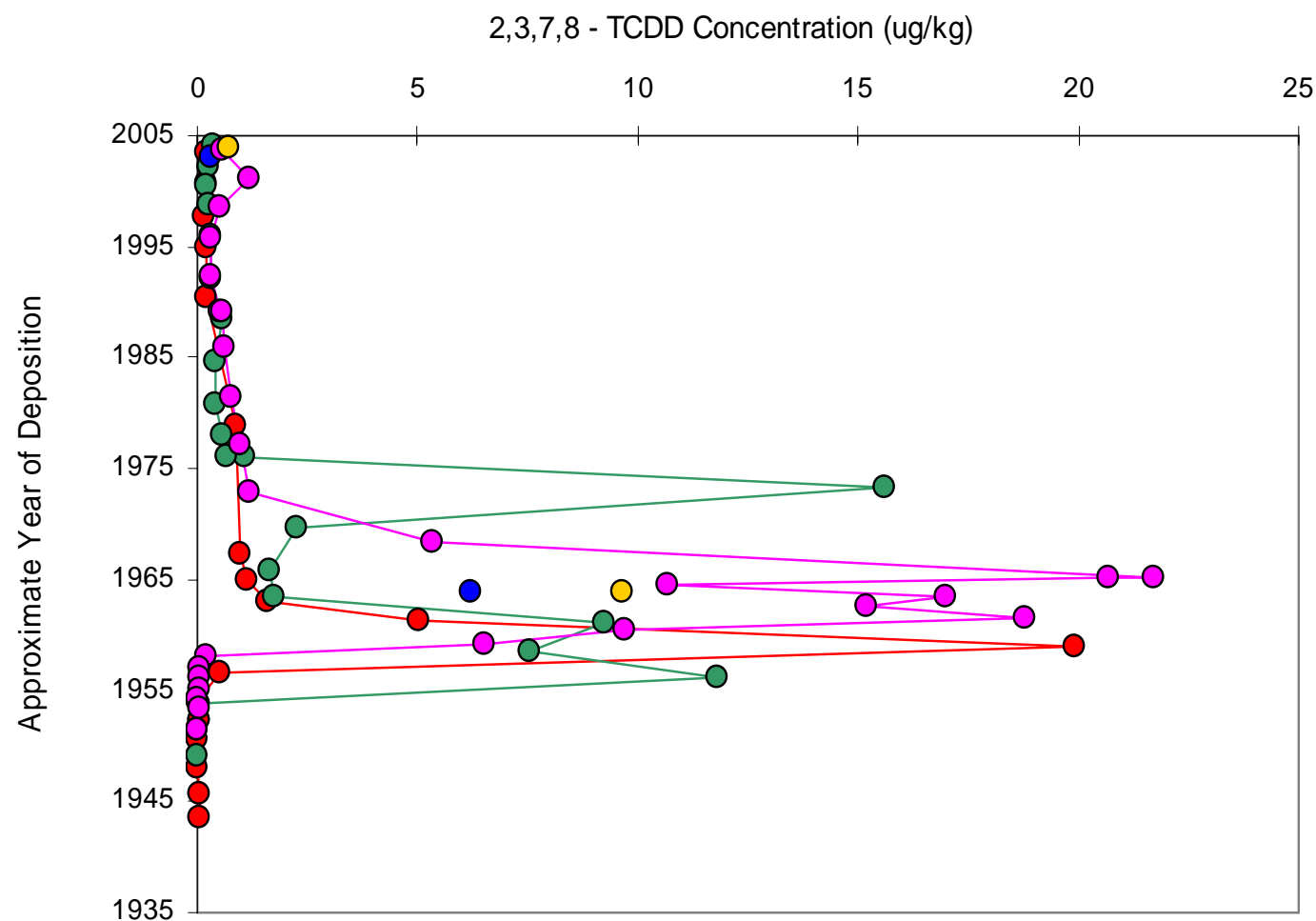
## Legend

- RM1.4
- RM2.2
- RM7.8
- RM11
- RM12.6

## Notes

Nondetect concentrations plotted as zero.

Data source: USEPA 2005 High Resolution Sediment Coring Program collected by Malcolm Pirnie, Inc.



Dated Sediment Core Profile for 2,3,7,8-TCDD Concentration of Lower Passaic River High Resolution Sediment Cores

*Lower Passaic River Restoration Project*

Figure 13-4a

September 2008



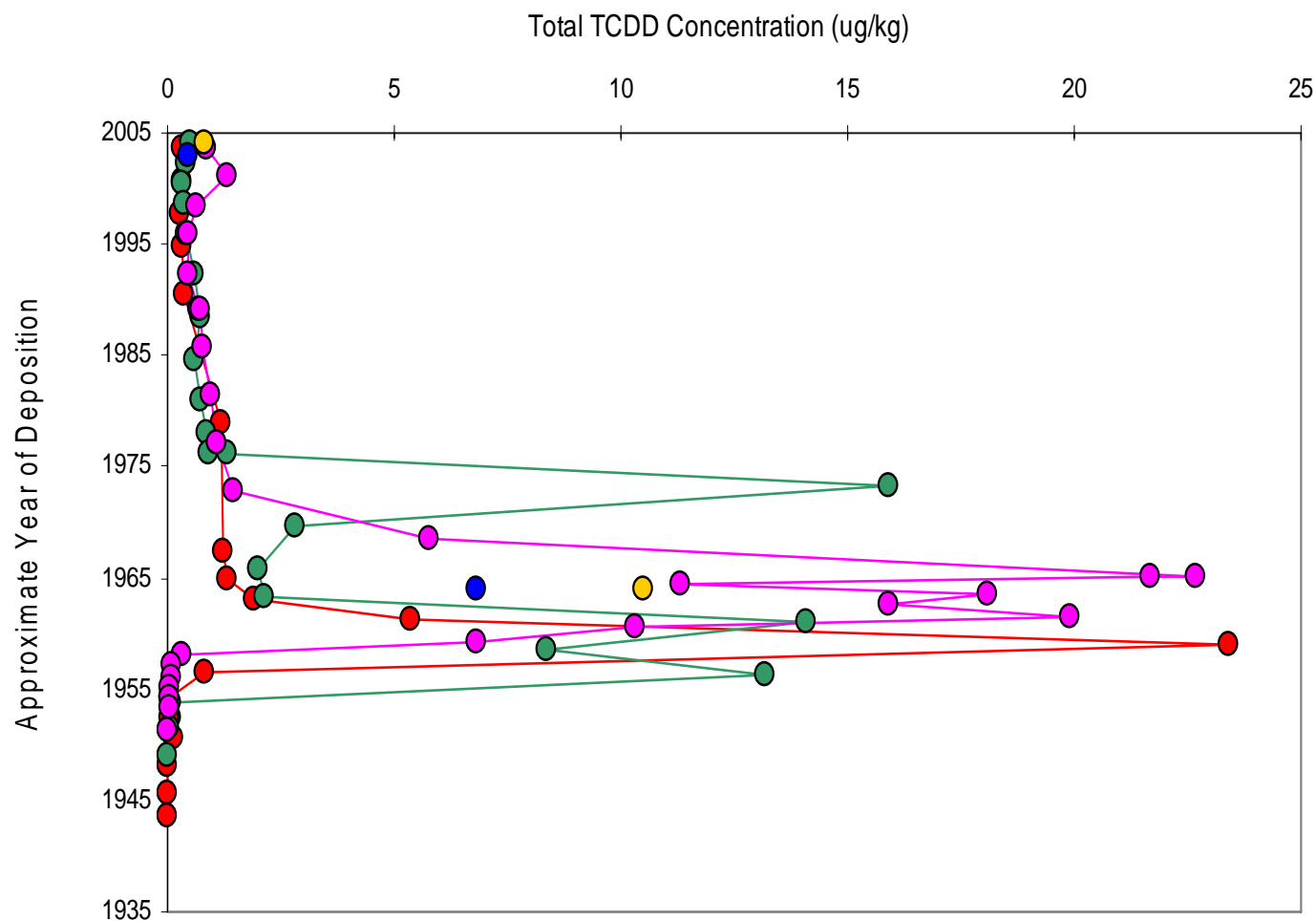
## Legend

- RM1.4
- RM2.2
- RM7.8
- RM11
- RM12.6

## Notes

Nondetect concentrations plotted as zero.

Data source: USEPA 2005 High Resolution Sediment Coring Program collected by Malcolm Pirnie, Inc.

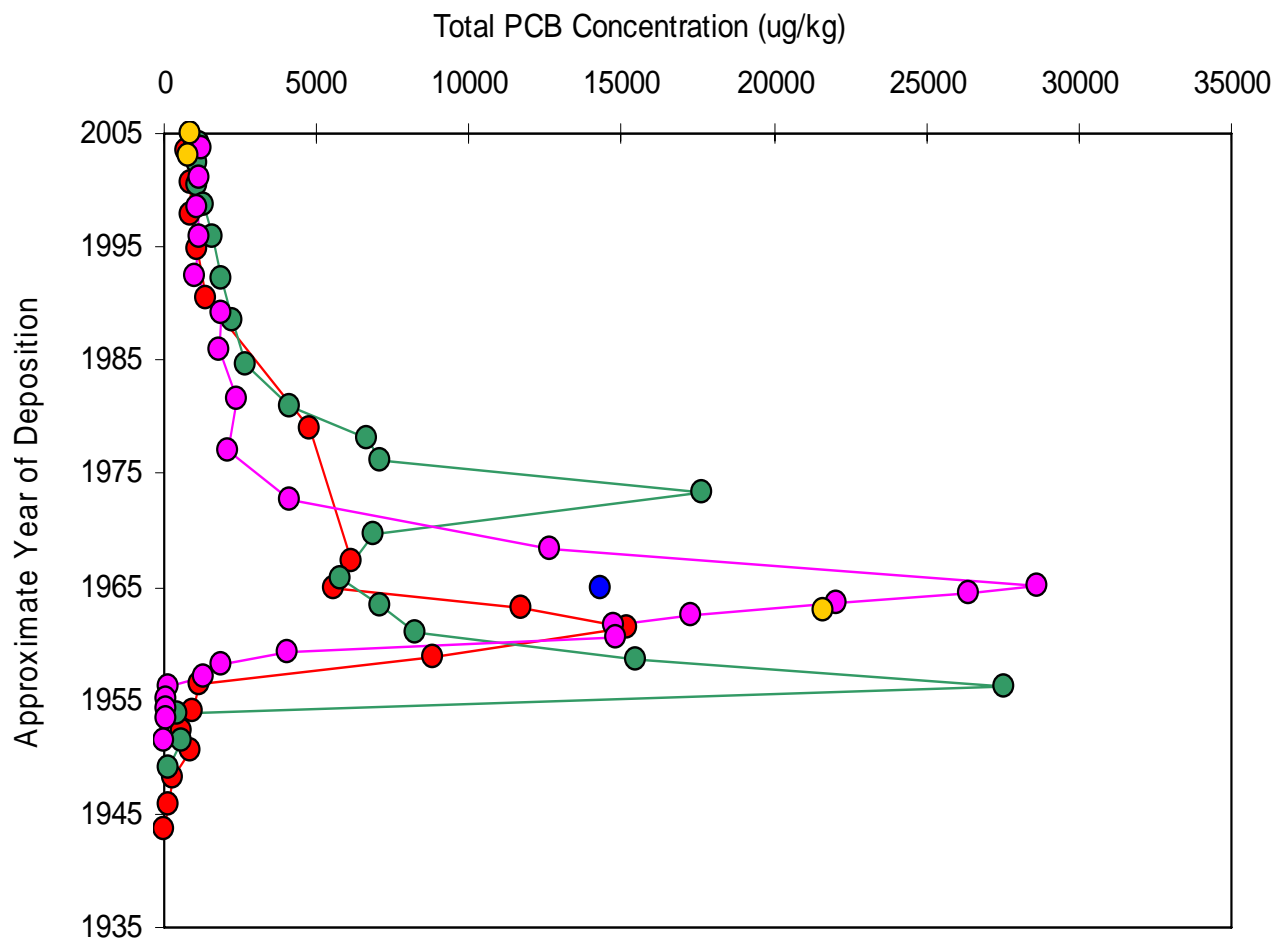


Dated Sediment Core Profile for Total TCDD Concentration of Lower Passaic River High Resolution Sediment Cores

*Lower Passaic River Restoration Project*

Figure 13-4b

September 2008



## Legend

- RM1.4
- RM2.2
- RM7.8
- RM11
- RM12.6

## Notes

Total PCB equals sum of 209 congeners with nondetected PCB congener concentrations equal to zero.

Nondetect concentrations plotted as zero.

Data source: USEPA 2005 High Resolution Sediment Coring Program collected by Malcolm Pirnie, Inc.



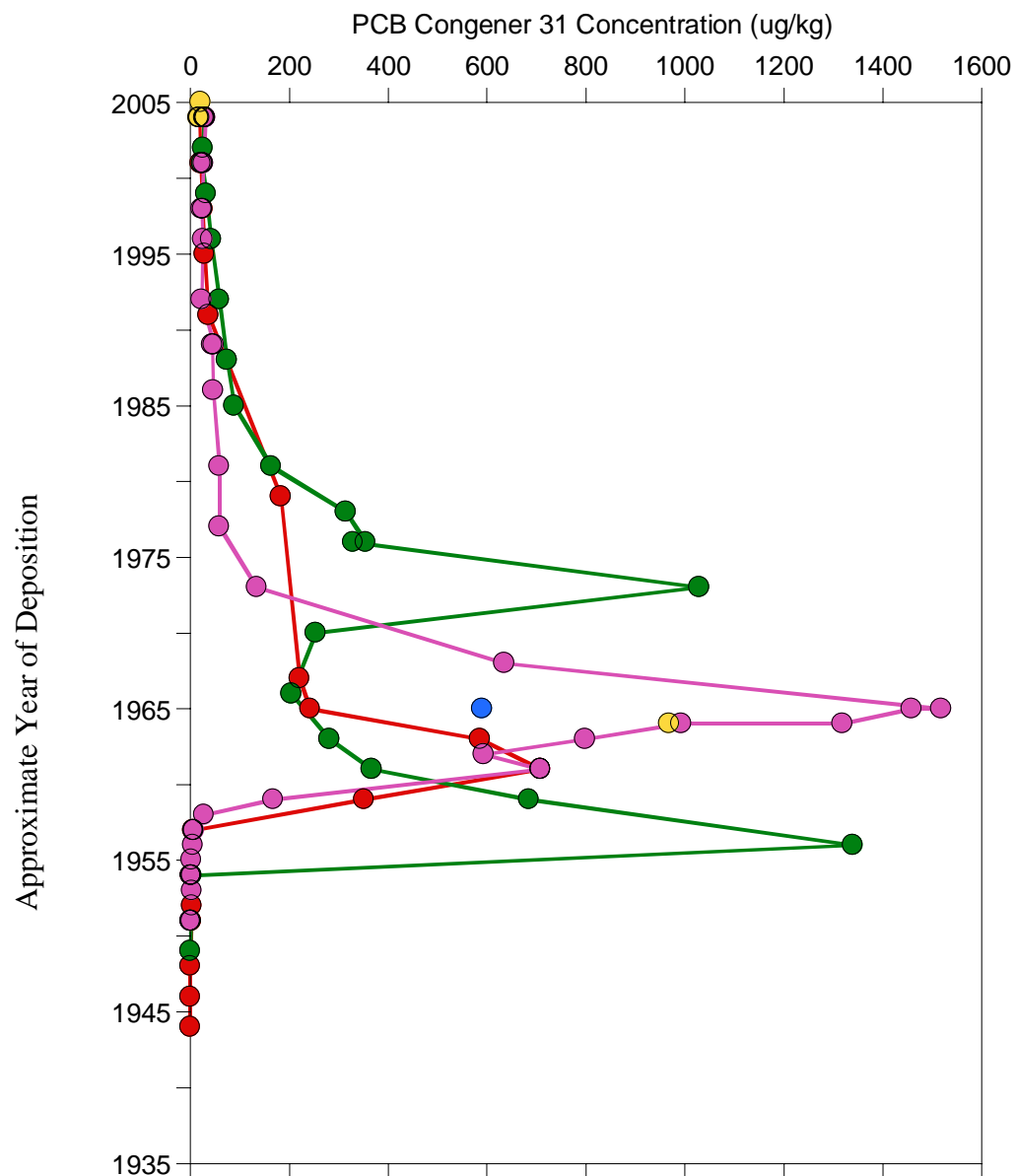
Dated Sediment Core Profile for Total PCB Concentration of Lower Passaic River High Resolution Sediment Cores

*Lower Passaic River Restoration Project*

Figure 13-4c

September 2008





## Legend

- RM1.4
- RM2.2
- RM7.8
- RM11
- RM12.6

## Notes

Nondetect concentrations plotted as zero.

Data source: USEPA 2005 High Resolution Sediment Coring Program collected by Malcolm Pirnie, Inc.

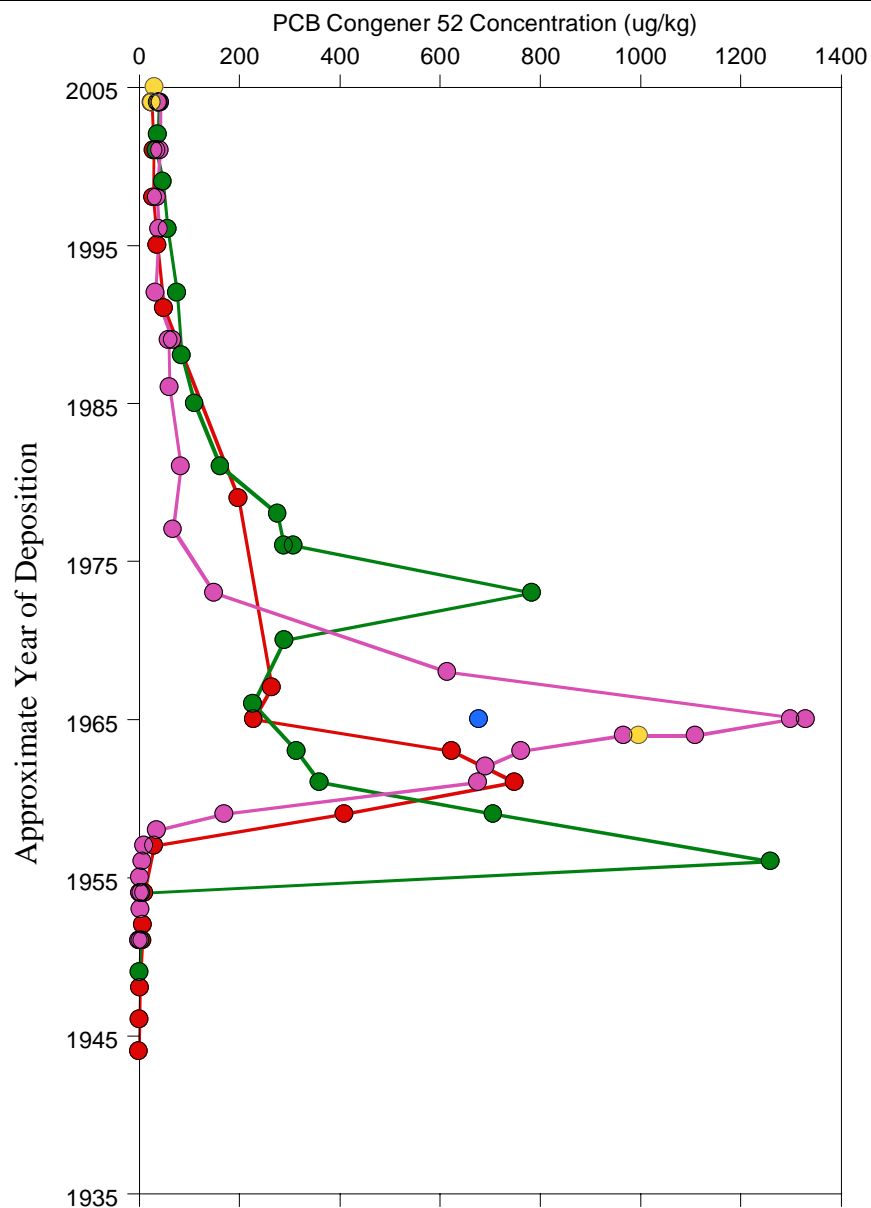


Dated Sediment Core Profile for PCB Congener 31 Concentration of Lower Passaic River High Resolution Sediment Cores

*Lower Passaic River Restoration Project*

Figure 13-4d

September 2008



## Legend

- RM1.4
- RM2.2
- RM7.8
- RM11
- RM12.6

## Notes

Nondetect concentrations plotted as zero.

Data source: USEPA 2005 High Resolution Sediment Coring Program collected by Malcolm Pirnie, Inc.



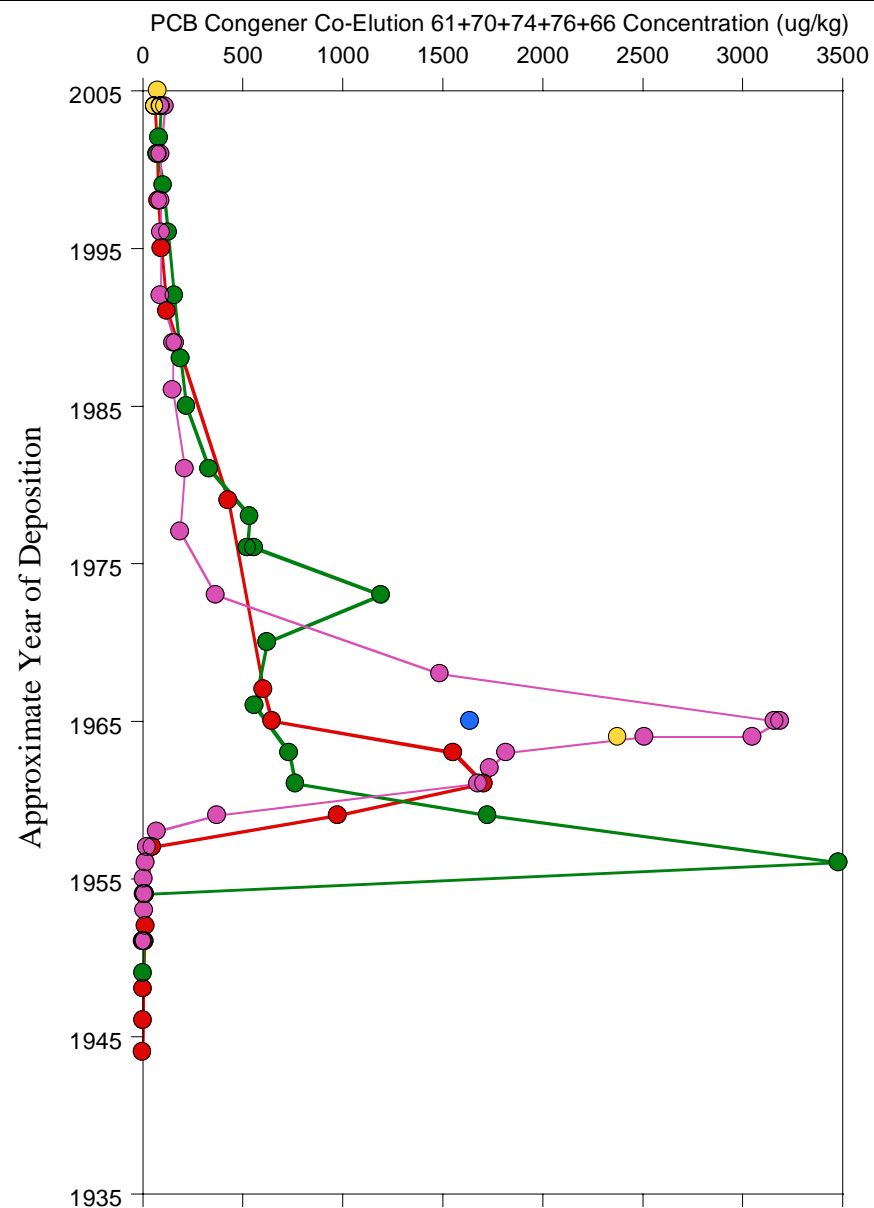
Dated Sediment Core Profile for PCB Congener 52 Concentration of Lower Passaic River High Resolution Sediment Cores

*Lower Passaic River Restoration Project*

Figure 13-4e

September 2008





## Legend

- RM1.4
- RM2.2
- RM7.8
- RM11
- RM12.6

## Notes

Nondetect concentrations plotted as zero.

Data source: USEPA 2005 High Resolution Sediment Coring Program collected by Malcolm Pirnie, Inc.

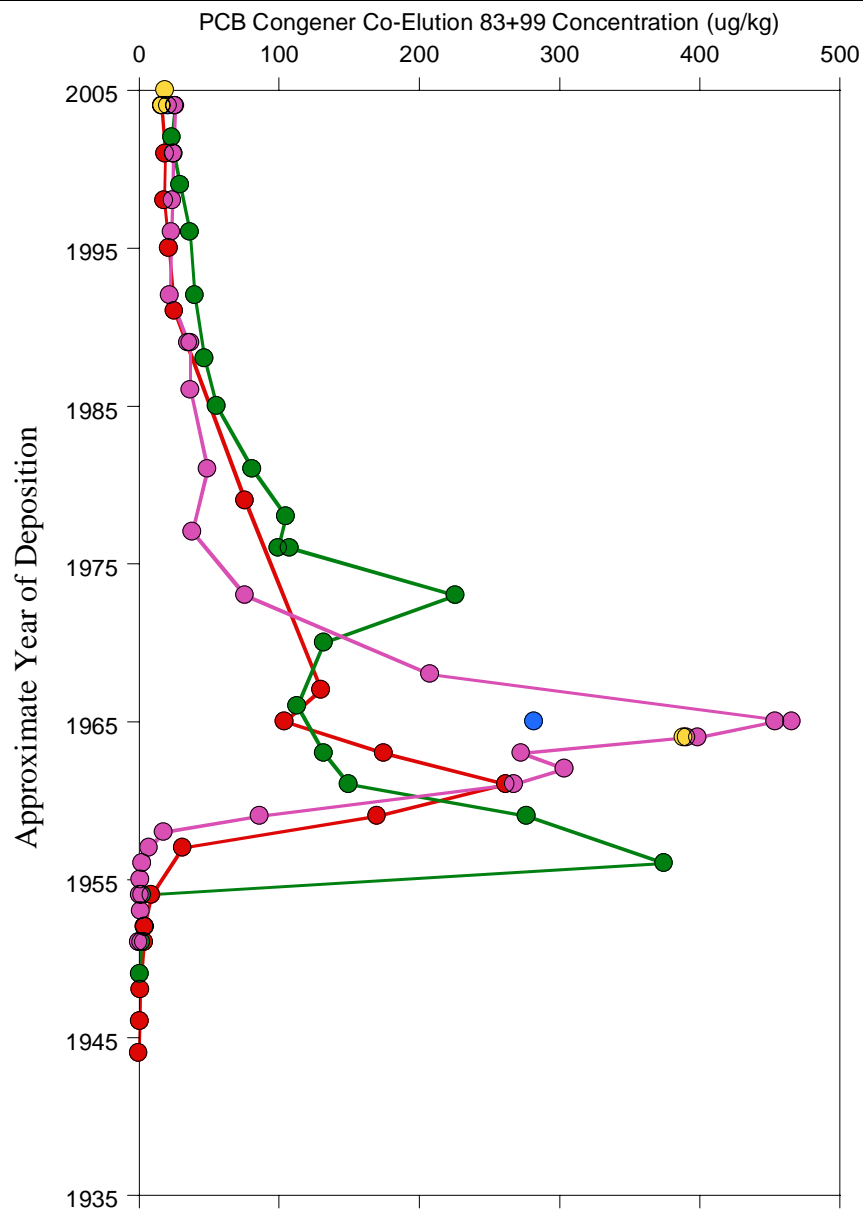


Dated Sediment Core Profile for PCB Congener Co-elution 61+70+74+76+66  
Concentration of Lower Passaic River High Resolution Sediment Cores

*Lower Passaic River Restoration Project*

Figure 13-4f

September 2008



## Legend

- RM1.4
- RM2.2
- RM7.8
- RM11
- RM12.6

## Notes

Nondetect concentrations plotted as zero.

Data source: USEPA 2005 High Resolution Sediment Coring Program collected by Malcolm Pirnie, Inc.



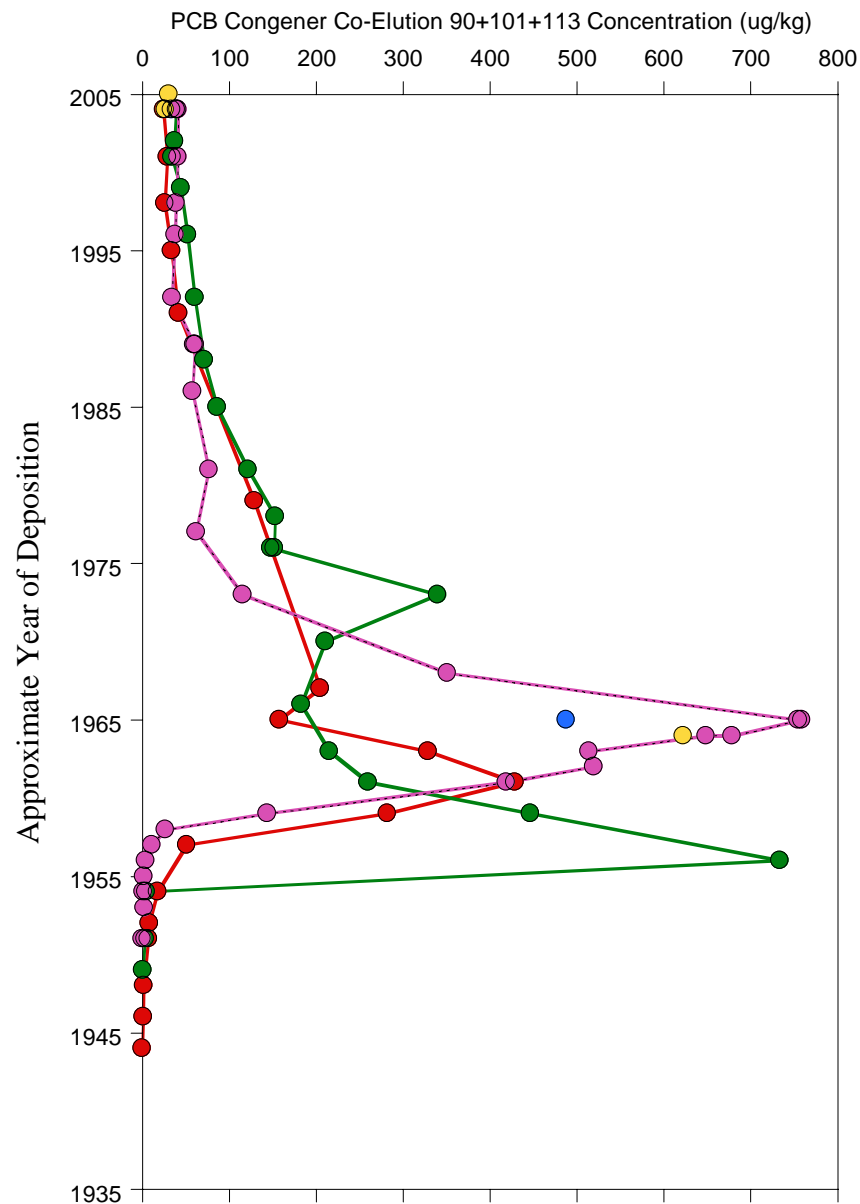
Dated Sediment Core Profile for PCB Congener Co-elution 83+99  
Concentration of Lower Passaic River High Resolution Sediment Cores

*Lower Passaic River Restoration Project*

Figure 13-4g

September 2008





## Legend

- RM1.4
- RM2.2
- RM7.8
- RM11
- RM12.6

## Notes

Nondetect concentrations plotted as zero.

Data source: USEPA 2005 High Resolution Sediment Coring Program collected by Malcolm Pirnie, Inc.

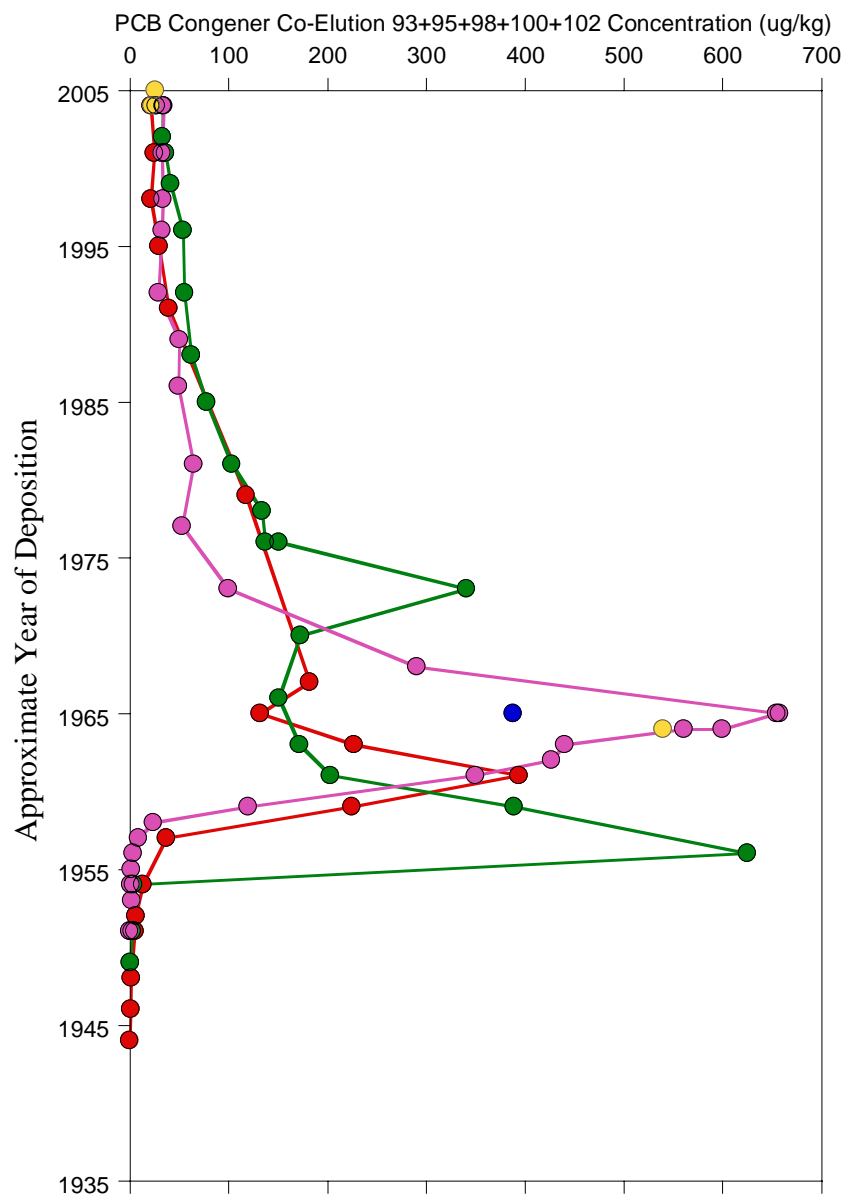


Dated Sediment Core Profile for PCB Congener Co-elution 90+101+113 Concentration of Lower Passaic River High Resolution Sediment Cores

*Lower Passaic River Restoration Project*

Figure 13-4h

September 2008



## Legend

- RM1.4
- RM2.2
- RM7.8
- RM11
- RM12.6

## Notes

Nondetect concentrations plotted as zero.

Data source: USEPA 2005 High Resolution Sediment Coring Program collected by Malcolm Pirnie, Inc.



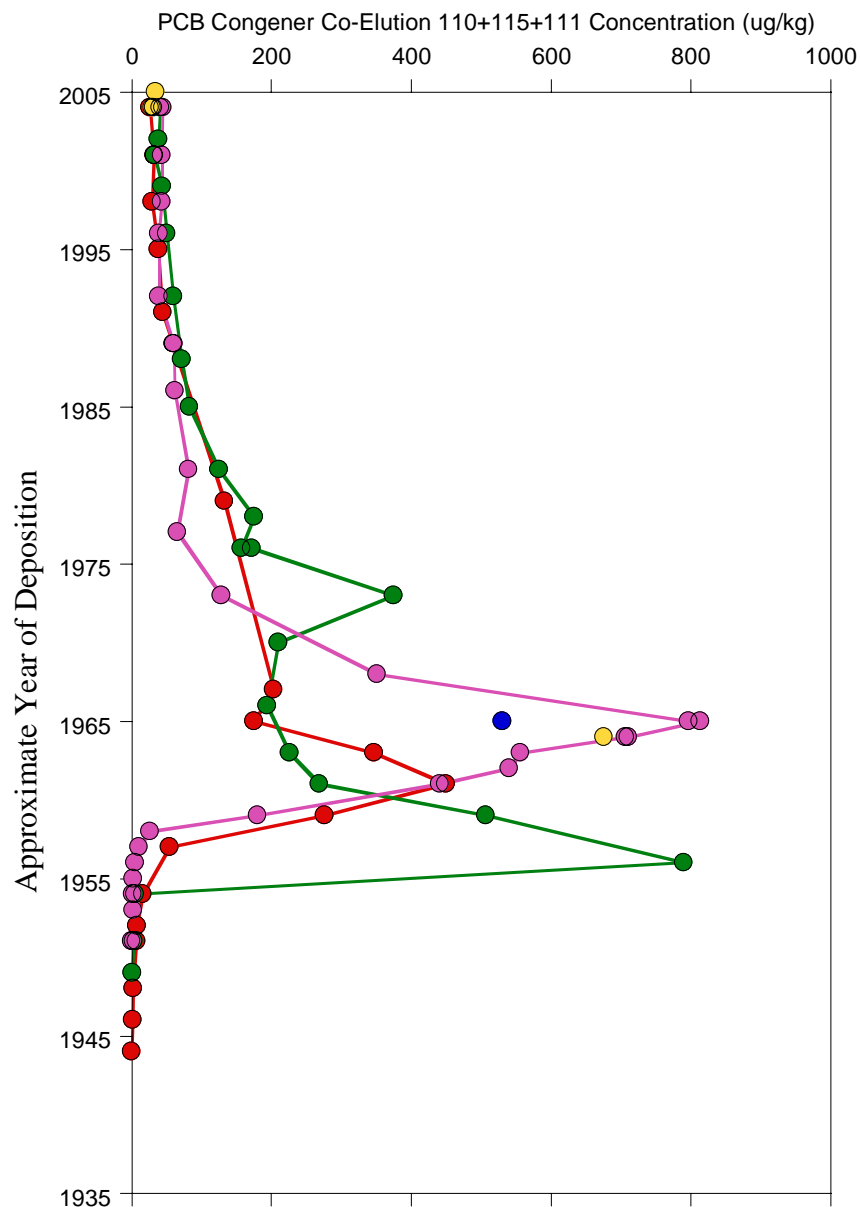
Dated Sediment Core Profile for PCB Congener Co-elution 93+95+98+100+102 Concentration of Lower Passaic River High Resolution Sediment Cores

Lower Passaic River Restoration Project

Figure 13-4i

September 2008



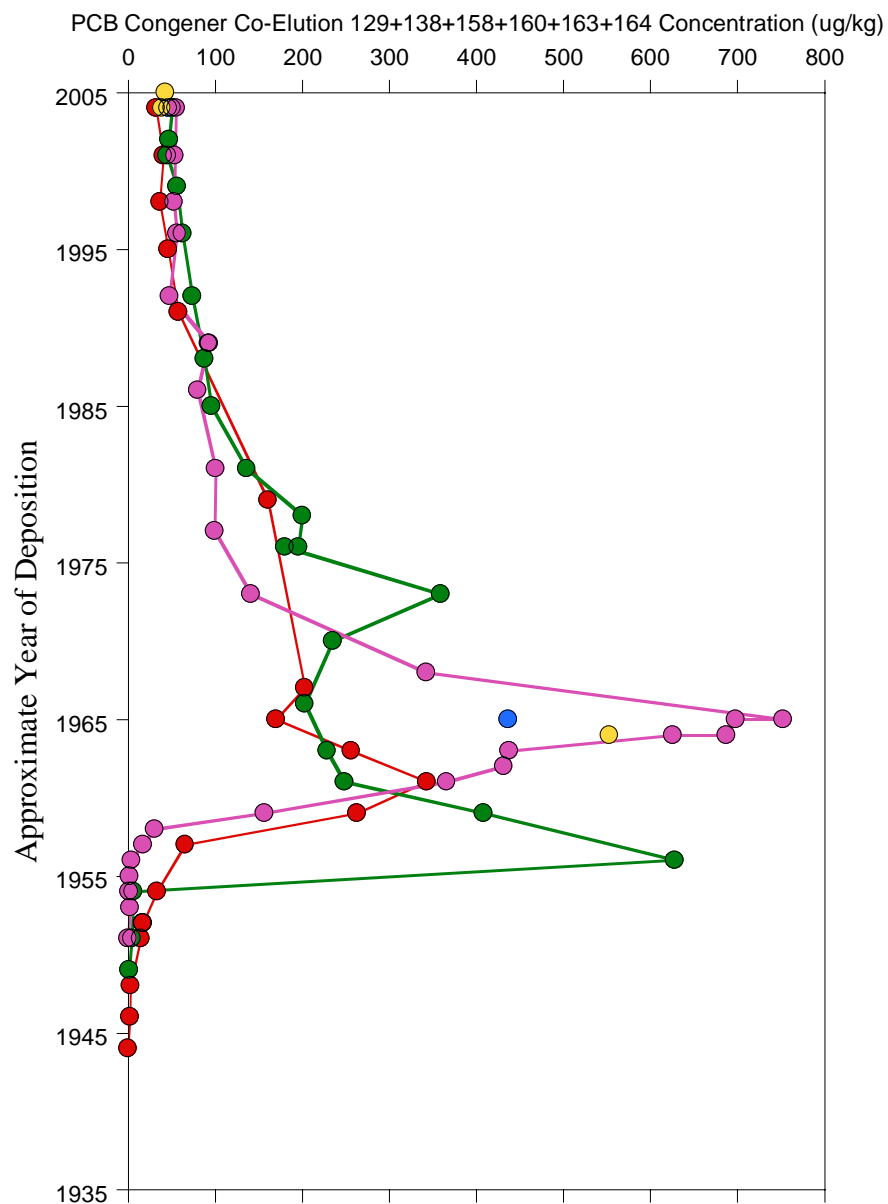


Dated Sediment Core Profile for PCB Congener Co-elution 110+115+111  
Concentration of Lower Passaic River High Resolution Sediment Cores

*Lower Passaic River Restoration Project*

Figure 13-4j

September 2008



## Legend

- RM1.4
- RM2.2
- RM7.8
- RM11
- RM12.6

## Notes

Nondetect concentrations plotted as zero.

Data source: USEPA 2005 High Resolution Sediment Coring Program collected by Malcolm Pirnie, Inc.

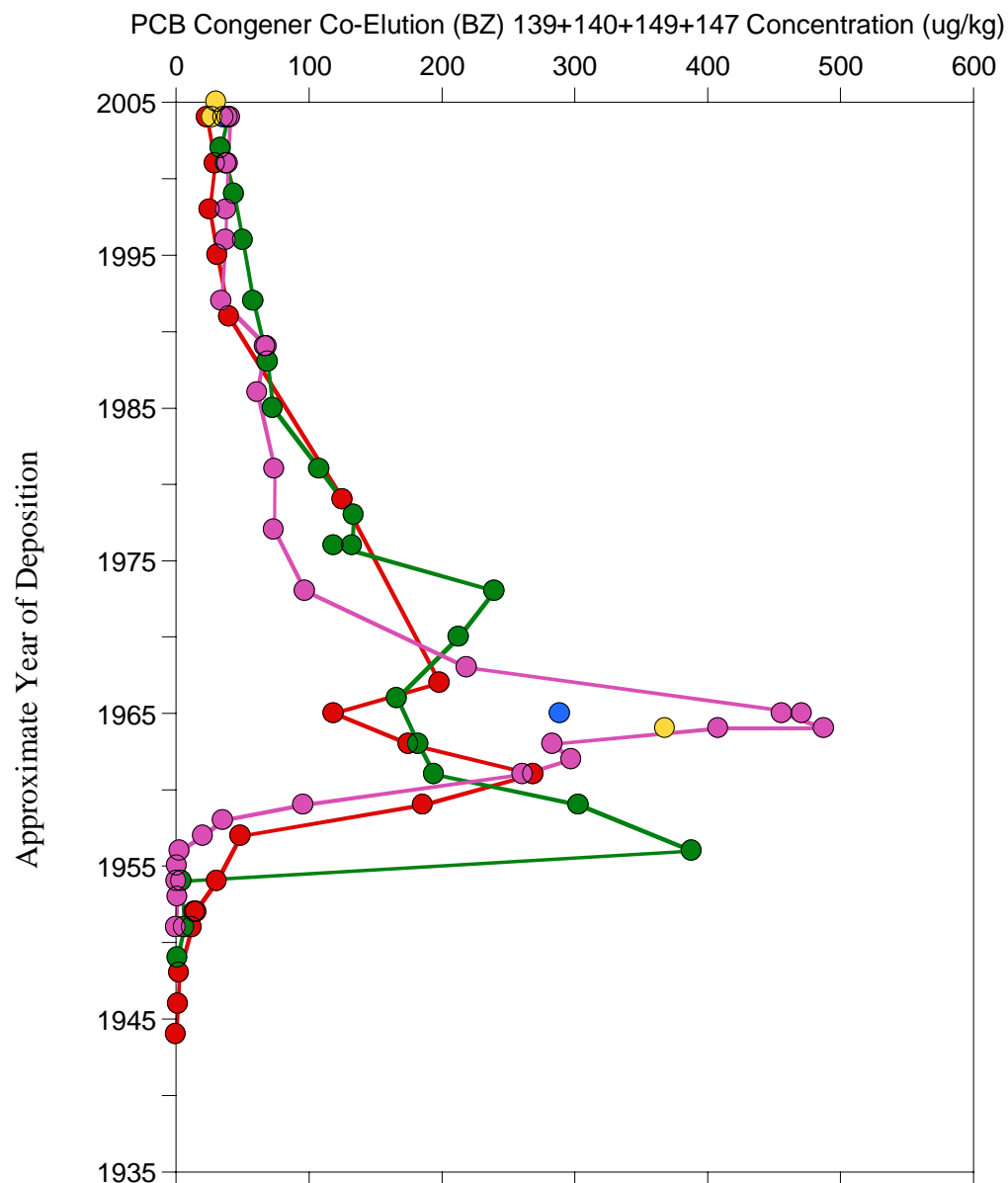


Dated Sediment Core Profile for PCB Congener Co-elution  
129+138+158+160+163+164 Concentration of Lower Passaic River High  
Resolution Sediment Cores

Lower Passaic River Restoration Project

Figure 13-4k

September 2008



## Legend

- RM1.4
- RM2.2
- RM7.8
- RM11
- RM12.6

## Notes

Nondetect concentrations plotted as zero.

Data source: USEPA 2005 High Resolution Sediment Coring Program collected by Malcolm Pirnie, Inc.

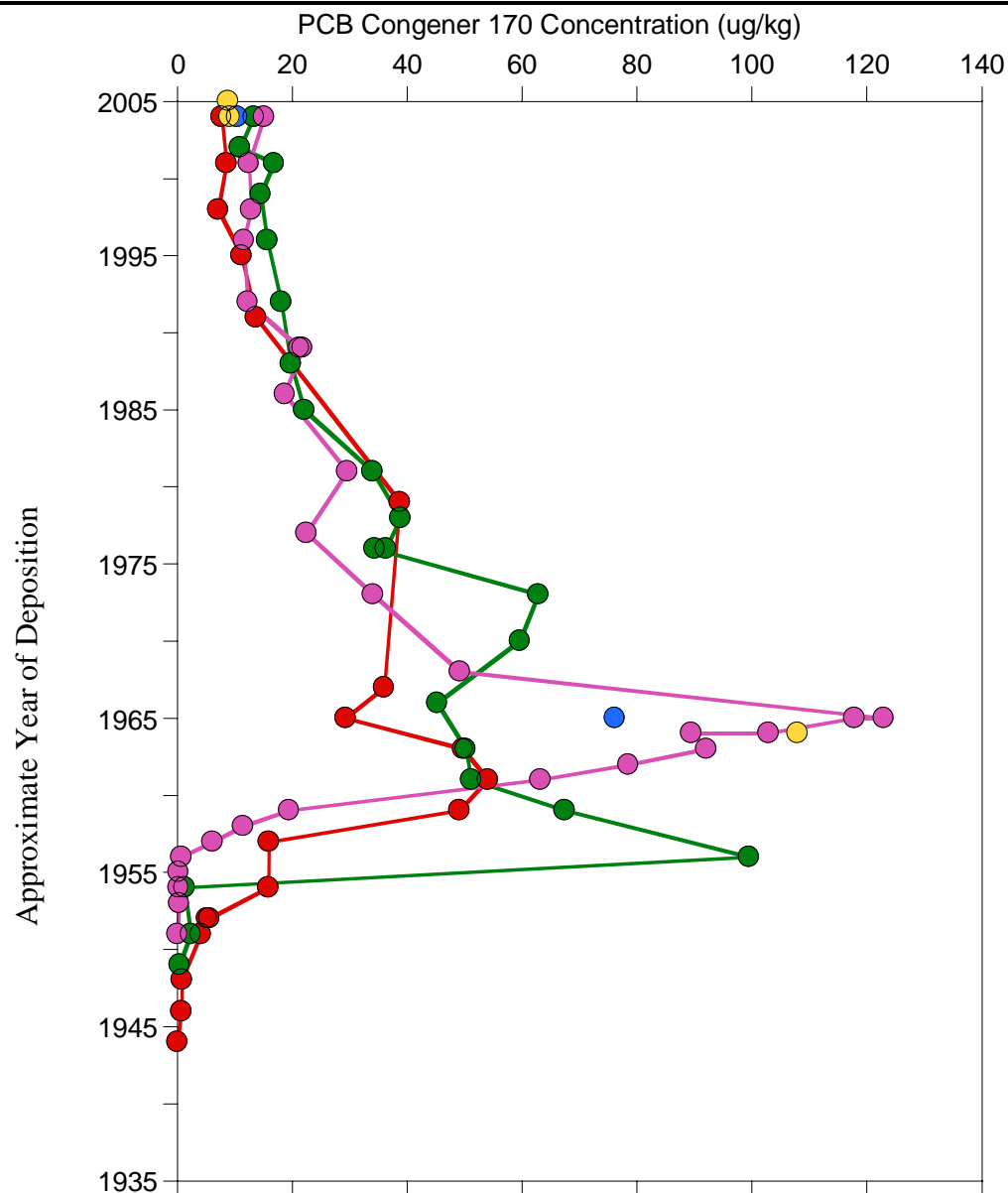


Dated Sediment Core Profile for PCB Congener Co-elution  
139+140+149+147 Concentration of Lower Passaic River High Resolution  
Sediment Cores  
*Lower Passaic River Restoration Project*

Figure 13-4I

September 2008





## Legend

- RM1.4
- RM2.2
- RM7.8
- RM11
- RM12.6

## Notes

Nondetect concentrations plotted as zero.

Data source: USEPA 2005 High Resolution Sediment Coring Program collected by Malcolm Pirnie, Inc.

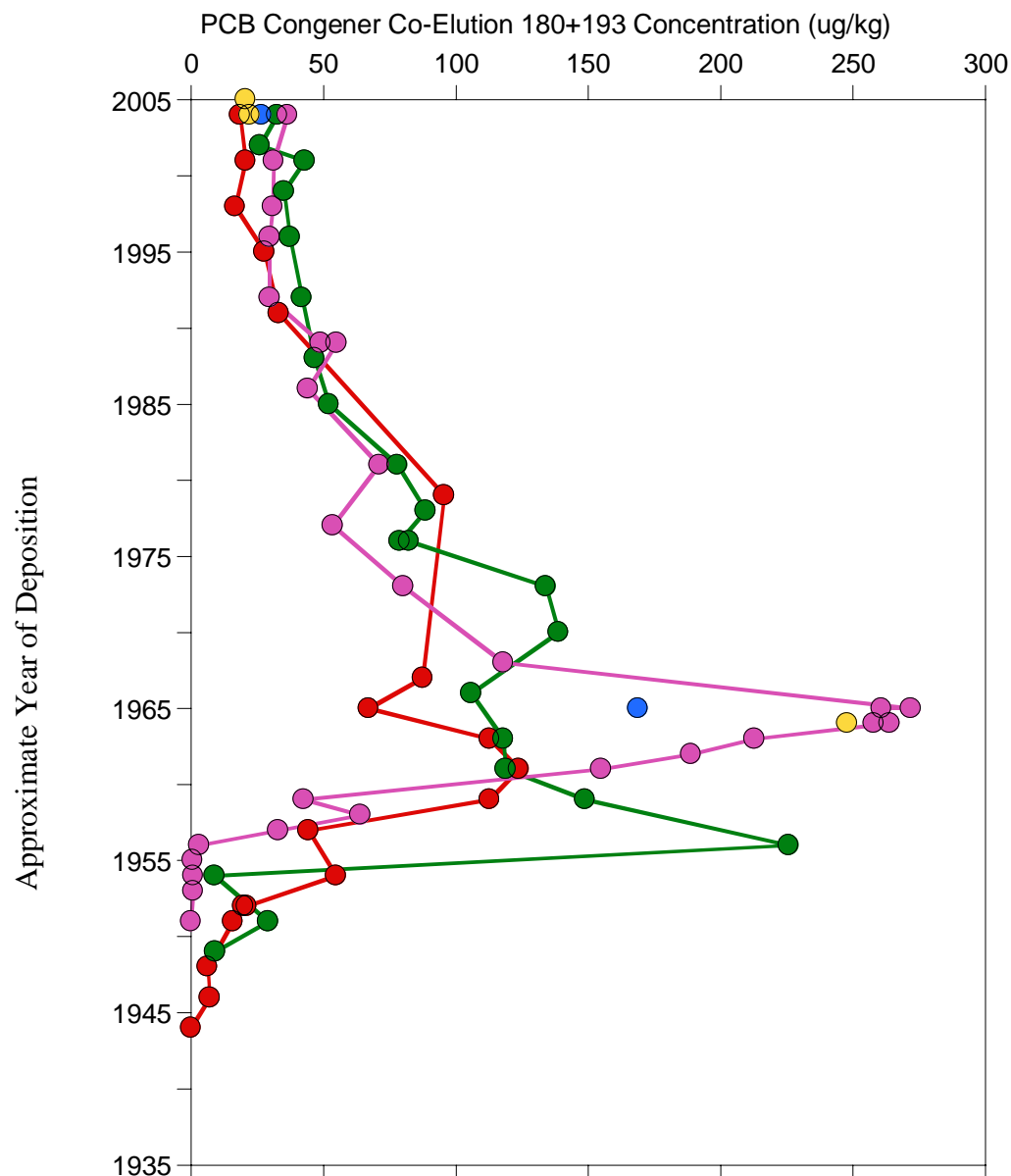


Dated Sediment Core Profile for PCB Congener 170 Concentration of Lower Passaic River High Resolution Sediment Cores

*Lower Passaic River Restoration Project*

Figure 13-4m

September 2008



## Legend

- RM1.4
- RM2.2
- RM7.8
- RM11
- RM12.6

## Notes

Nondetect concentrations plotted as zero.

Data source: USEPA 2005 High Resolution Sediment Coring Program collected by Malcolm Pirnie, Inc.



Dated Sediment Core Profile for PCB Congener Co-elution 180+193  
Concentration of Lower Passaic River High Resolution Sediment Cores

*Lower Passaic River Restoration Project*

Figure 13-4n

September 2008

## Legend

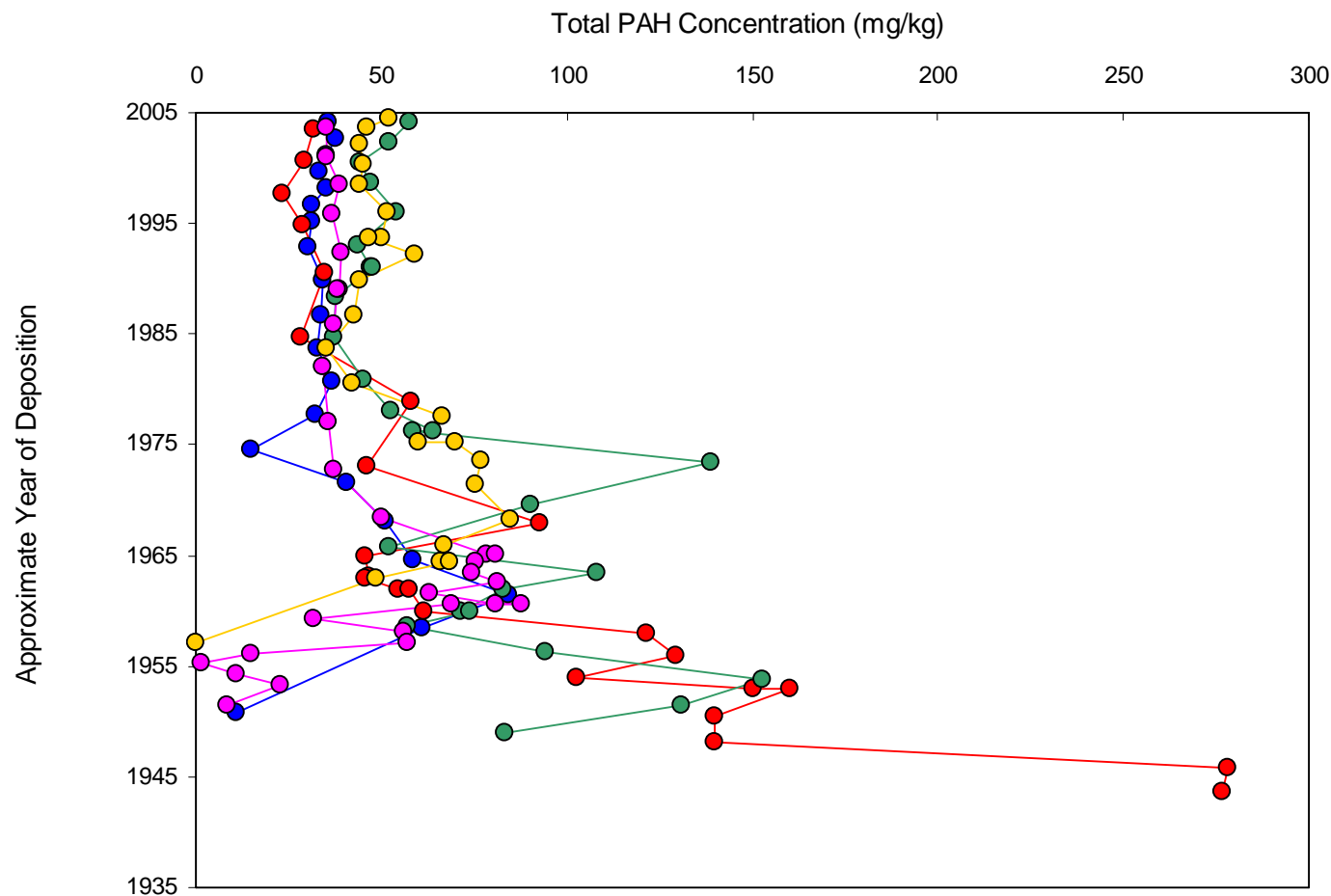
- RM1.4
- RM2.2
- RM7.8
- RM11
- RM12.6

## Notes

Total PAH equals the sum of 16 priority PAH compound with nondetect PAH compounds equal to zero.

Nondetect concentrations plotted as zero.

Data source: USEPA 2005 High Resolution Sediment Coring Program collected by Malcolm Pirnie, Inc.



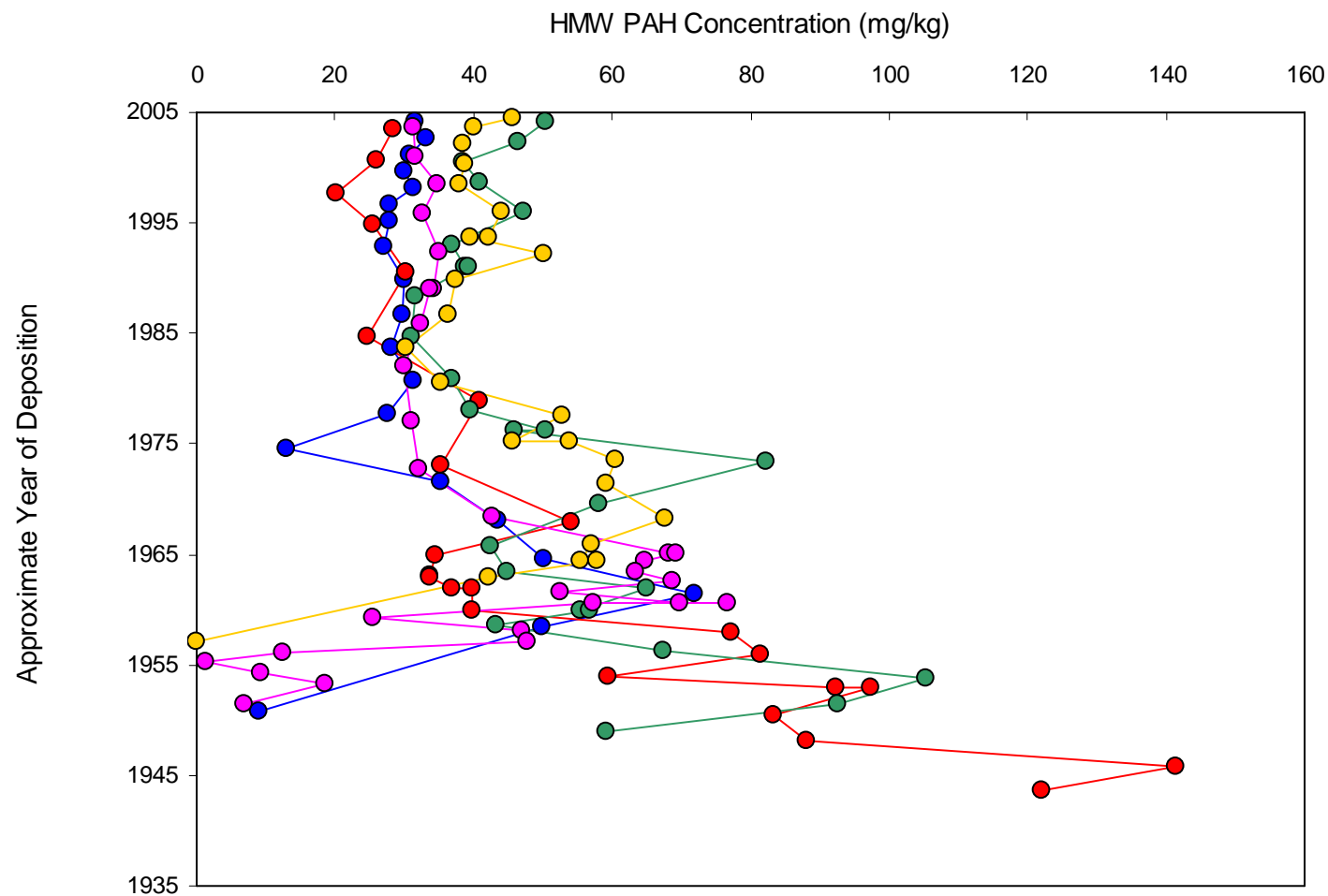
Dated Sediment Core Profile for Total PAH Concentration of Lower Passaic River High Resolution Sediment Cores

*Lower Passaic River Restoration Project*

Figure 13-4o

September 2008



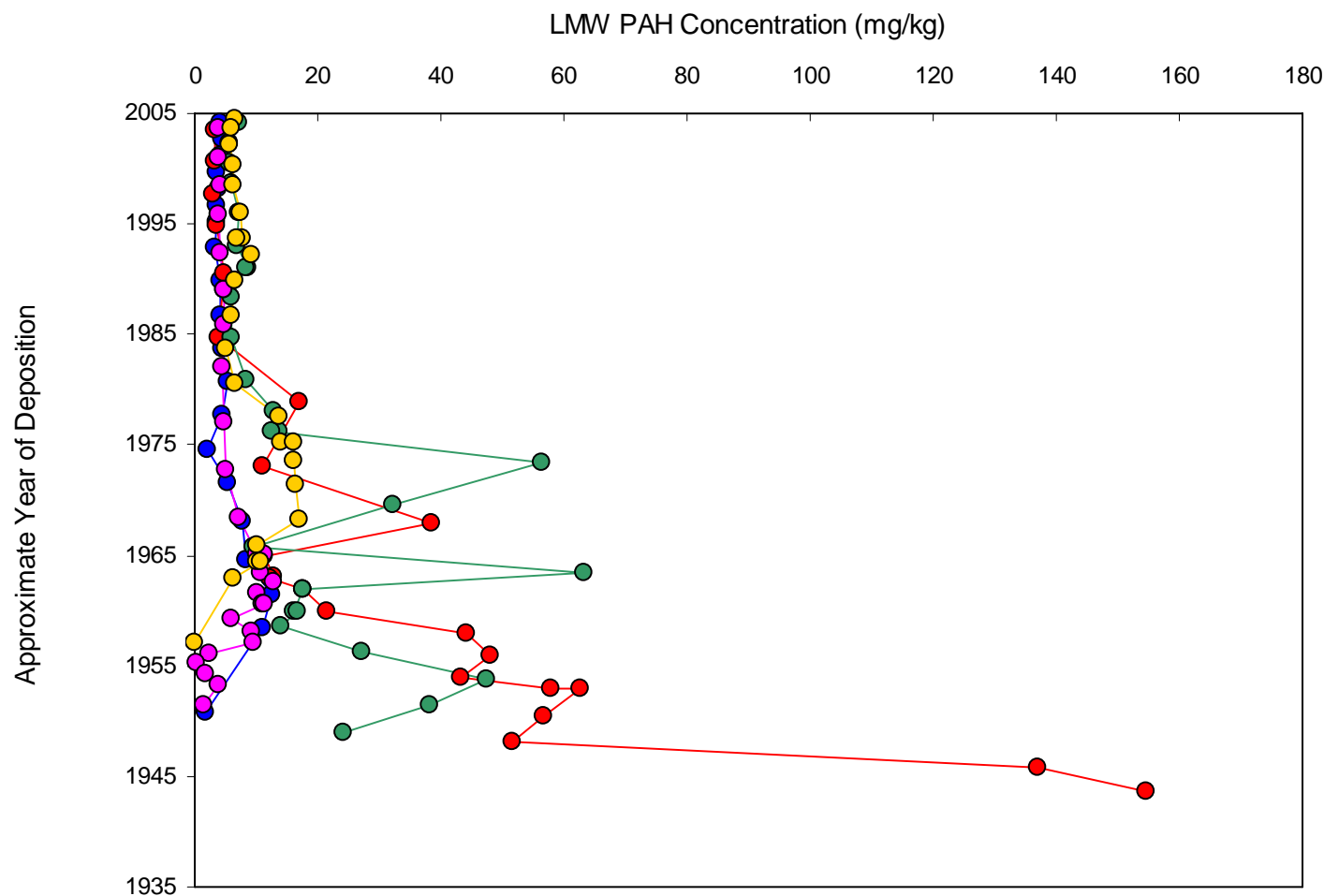


Dated Sediment Core Profile for HMW PAH Concentration of Lower Passaic River High Resolution Sediment Cores

*Lower Passaic River Restoration Project*

Figure 13-4p

September 2008

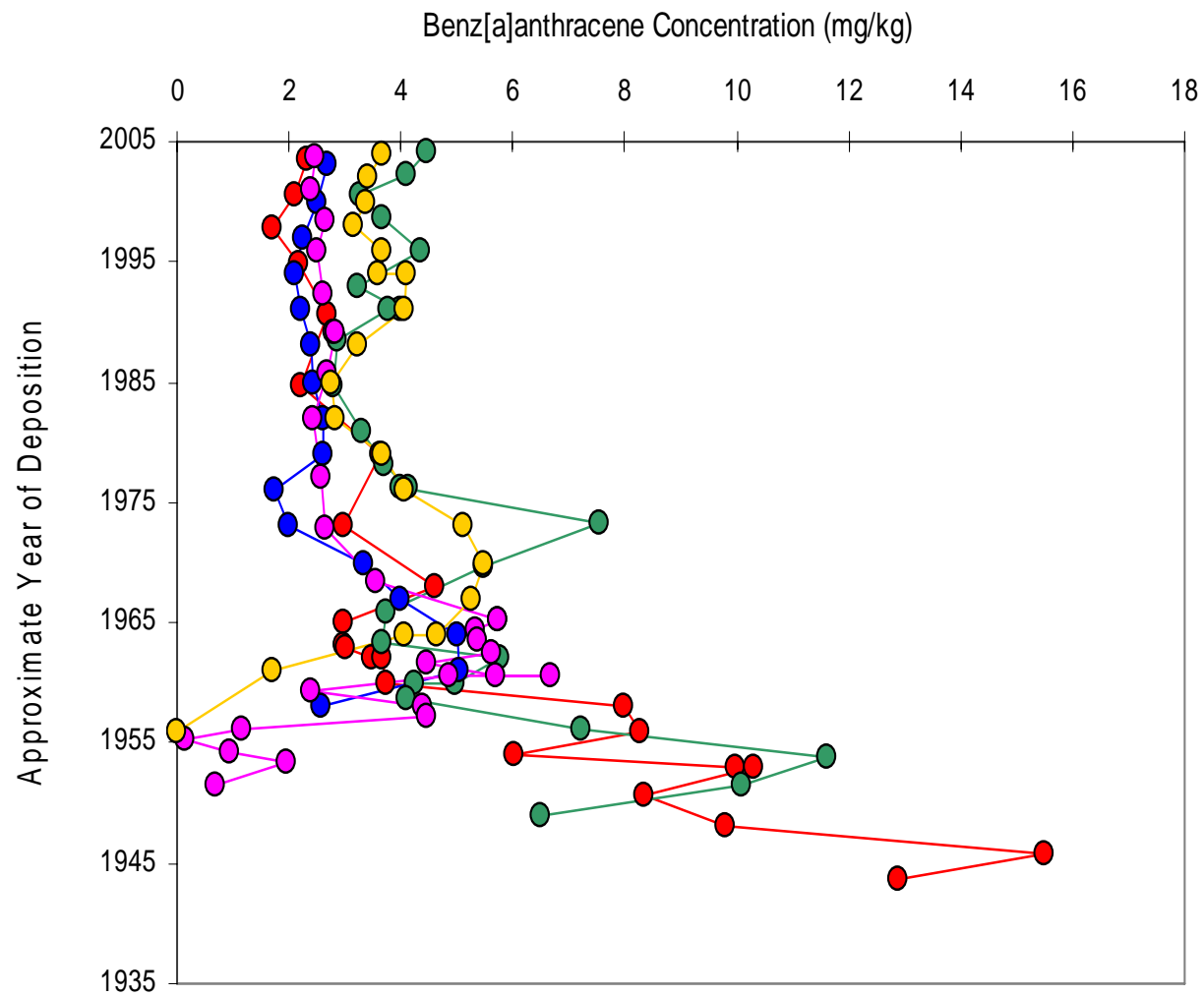


Dated Sediment Core Profile for LMW PAH Concentration of Lower Passaic River High Resolution Sediment Cores

*Lower Passaic River Restoration Project*

Figure 13-4q

September 2008



## Legend

- RM1.4
- RM2.2
- RM7.8
- RM11
- RM12.6

## Notes

Nondetect concentrations plotted as zero.

Data source: USEPA 2005 High Resolution Sediment Coring Program collected by Malcolm Pirnie, Inc.

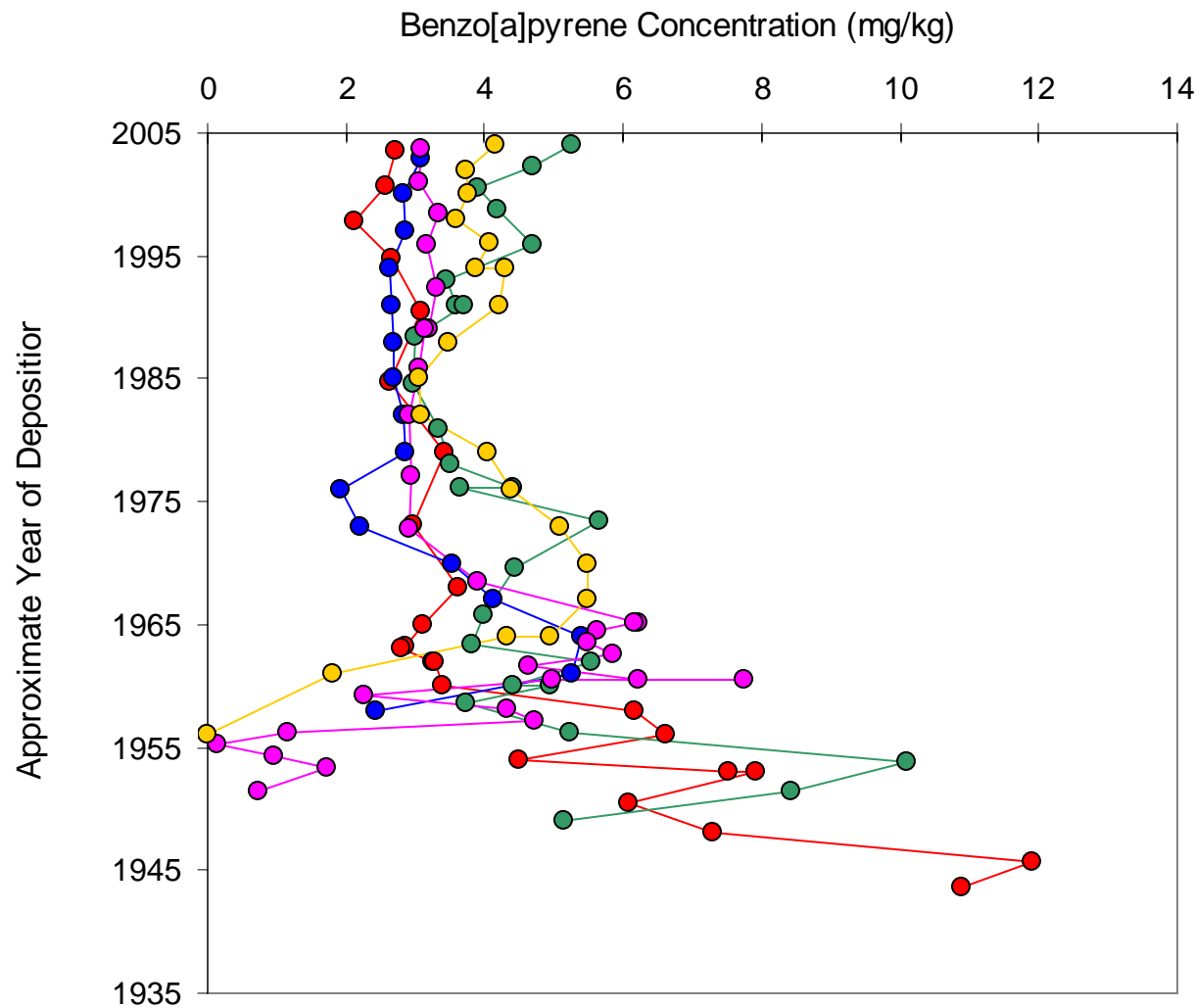


Dated Sediment Core Profile for Benz[a]anthracene Concentration of Lower Passaic River High Resolution Sediment Cores

*Lower Passaic River Restoration Project*

Figure 13-4r

September 2008



### Legend

- RM1.4
- RM2.2
- RM7.8
- RM11
- RM12.6

### Notes

Nondetect concentrations plotted as zero.

Data source: USEPA 2005 High Resolution Sediment Coring Program collected by Malcolm Pirnie, Inc.



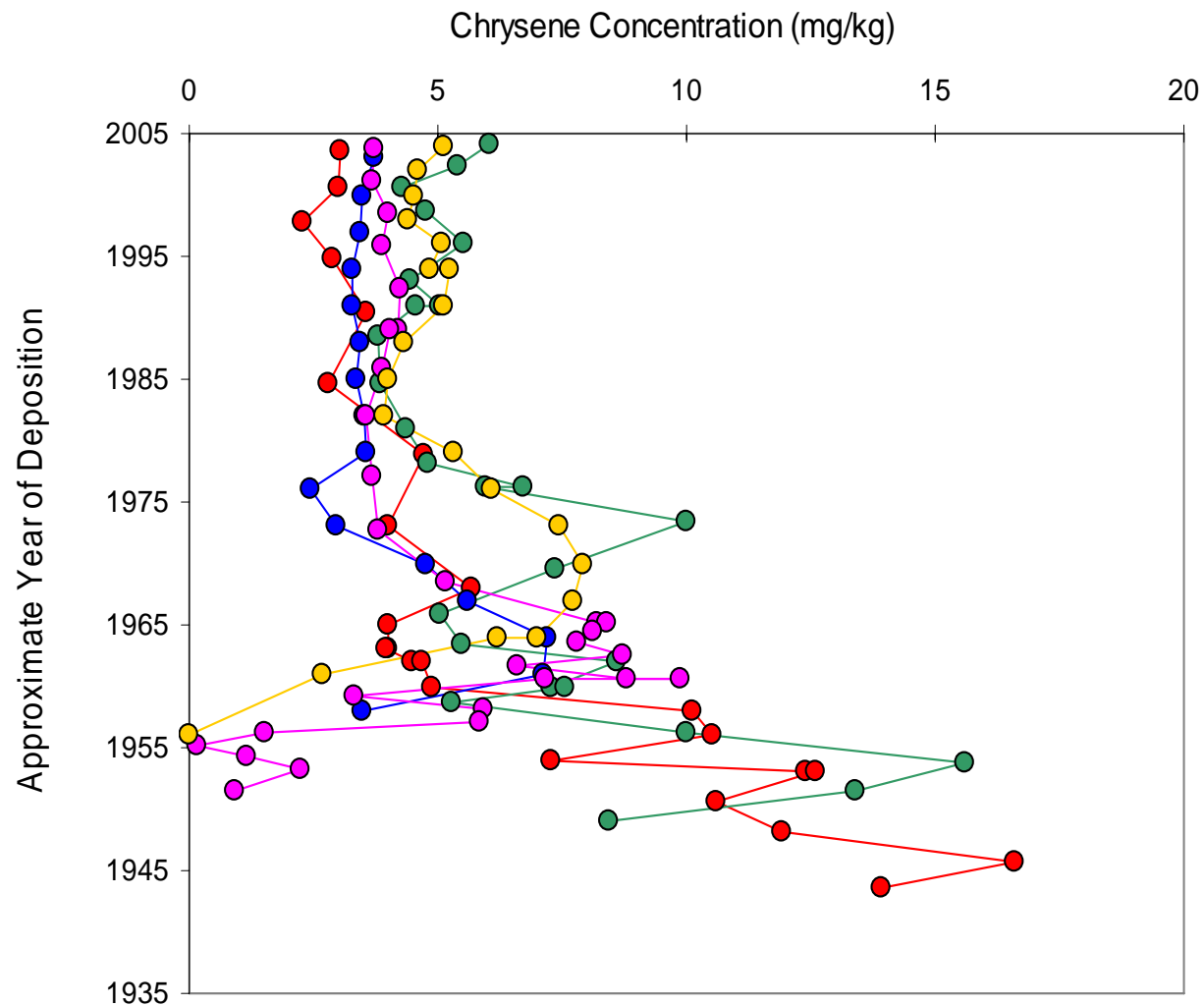
Dated Sediment Core Profile for Benzo[a]pyrene Concentration of Lower Passaic River High Resolution Sediment Cores

*Lower Passaic River Restoration Project*

Figure 13-4s

September 2008



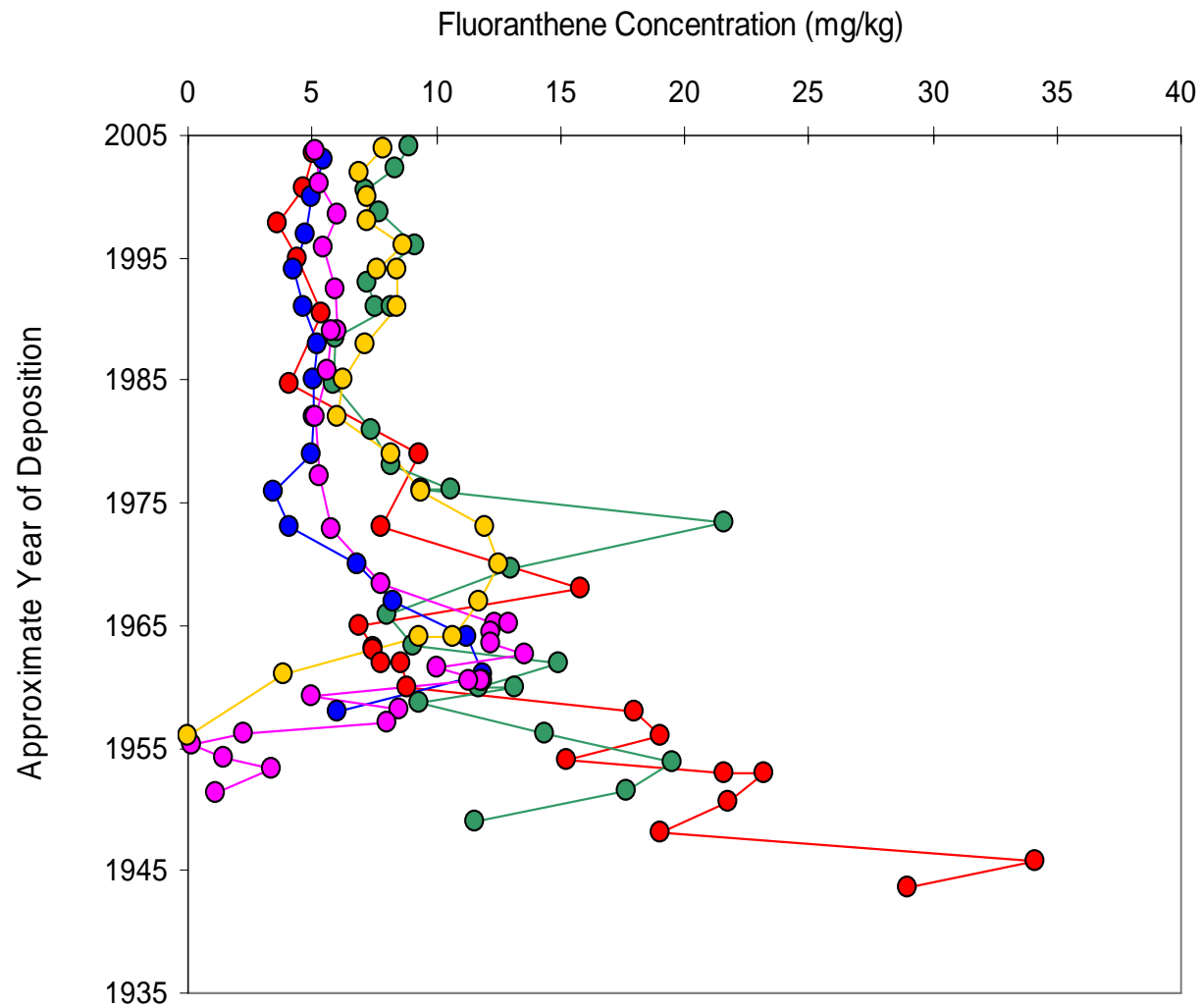


Dated Sediment Core Profile for Chrysene Concentration of Lower Passaic River High Resolution Sediment Cores

*Lower Passaic River Restoration Project*

Figure 13-4t

September 2008



### Legend

- RM1.4
- RM2.2
- RM7.8
- RM11
- RM12.6

### Notes

Nondetect concentrations plotted as zero.

Data source: USEPA 2005 High Resolution Sediment Coring Program collected by Malcolm Pirnie, Inc.

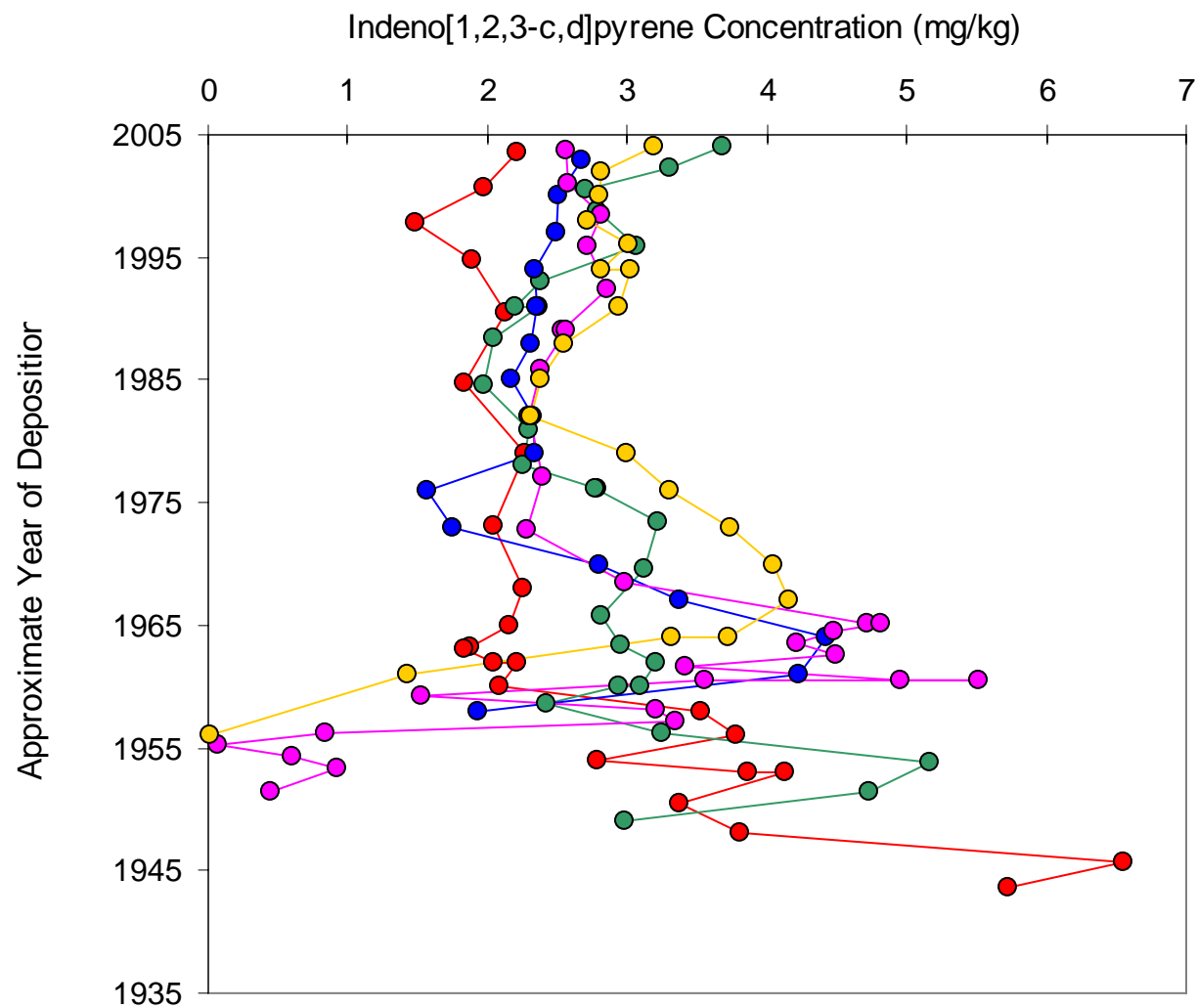


Dated Sediment Core Profile for Fluoranthene Concentration of Lower Passaic River High Resolution Sediment Cores

*Lower Passaic River Restoration Project*

Figure 13-4u

September 2008



## Legend

- RM1.4
- RM2.2
- RM7.8
- RM11
- RM12.6

## Notes

Nondetect concentrations plotted as zero.

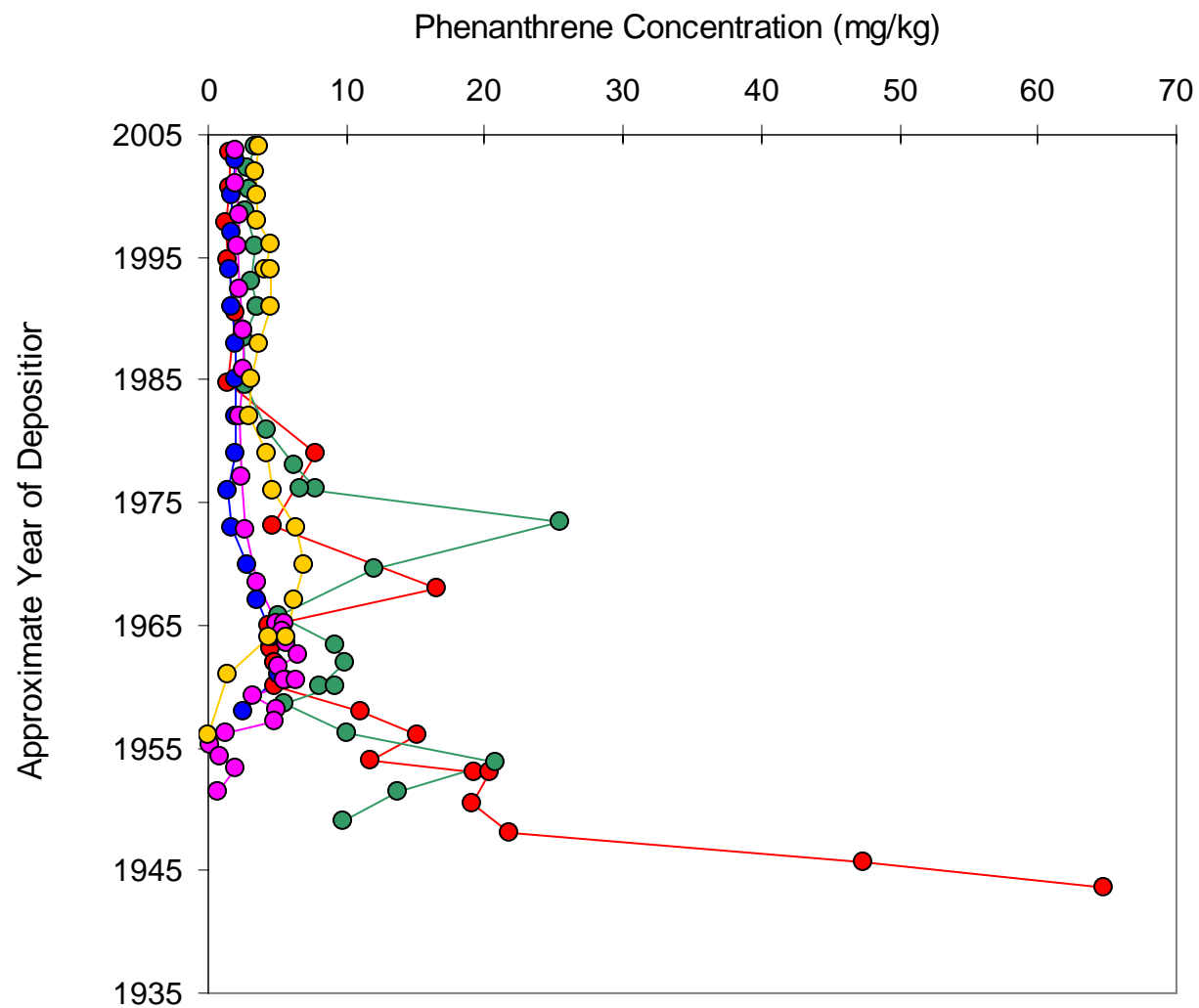
Data source: USEPA 2005 High Resolution Sediment Coring Program collected by Malcolm Pirnie, Inc.



Dated Sediment Core Profile for Indeno[1,2,3-c,d]pyrene  
Concentration of Lower Passaic River High Resolution Sediment  
Cores  
*Lower Passaic River Restoration Project*

Figure 13-4v

September 2008



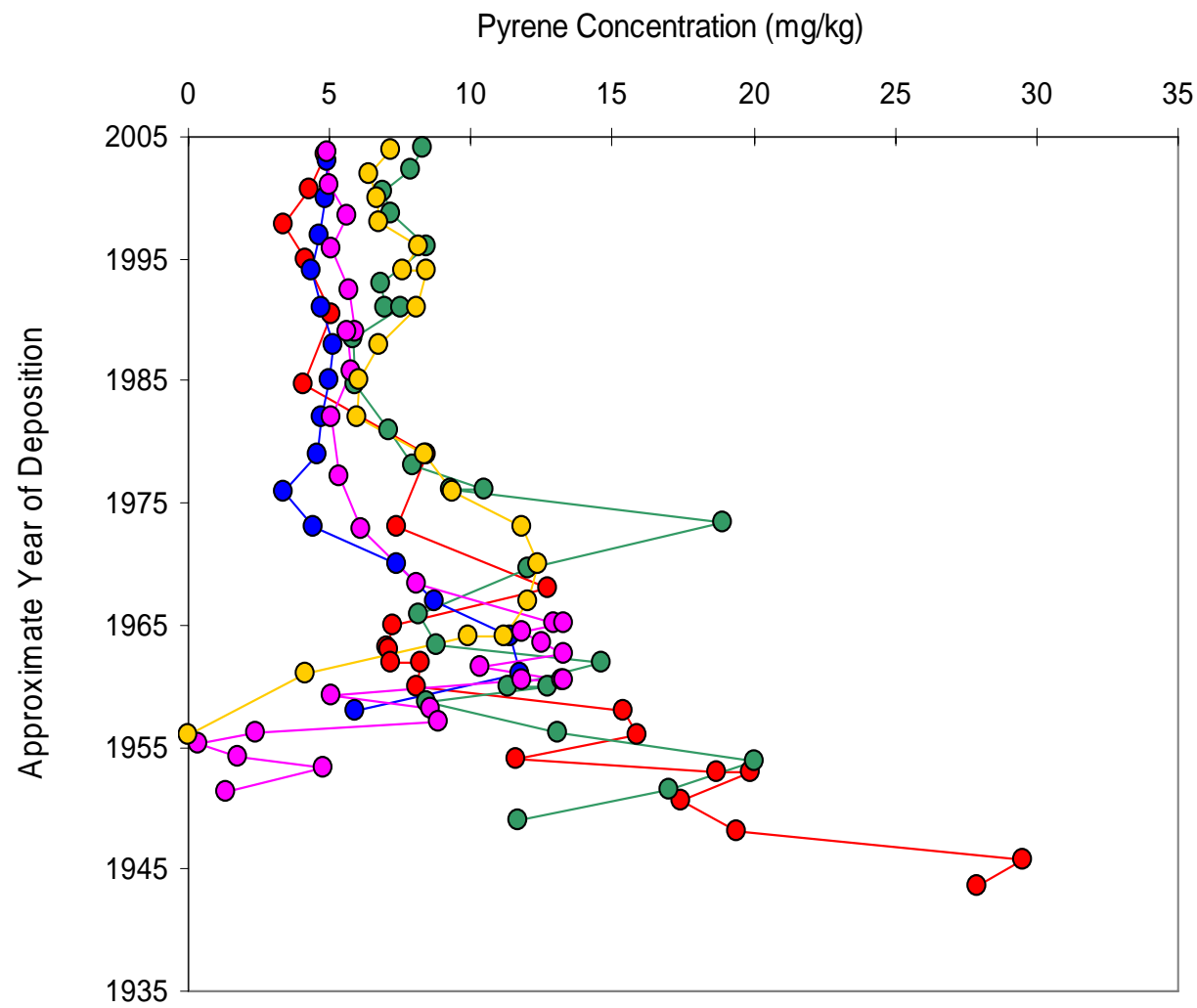
Dated Sediment Core Profile for Phenanthrene Concentration of Lower Passaic River High Resolution Sediment Cores

*Lower Passaic River Restoration Project*

Figure 13-4w

September 2008





## Legend

- RM1.4
- RM2.2
- RM7.8
- RM11
- RM12.6

## Notes

Nondetect concentrations plotted as zero.

Data source: USEPA 2005 High Resolution Sediment Coring Program collected by Malcolm Pirnie, Inc.

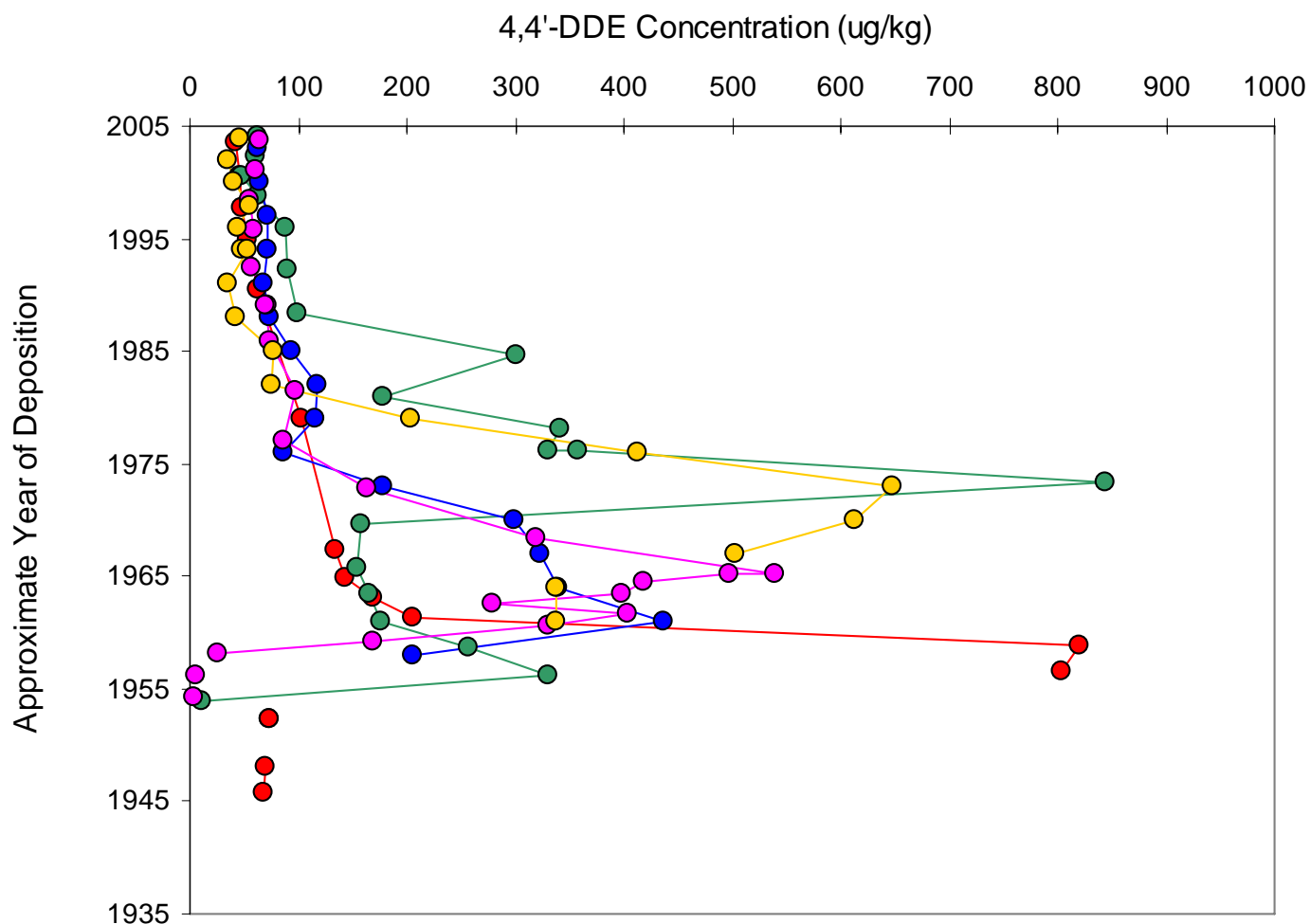


## Dated Sediment Core Profile for Pyrene Concentration of Lower Passaic River High Resolution Sediment Cores

*Lower Passaic River Restoration Project*

Figure 13-4x

September 2008



## Legend

- RM1.4
- RM2.2
- RM7.8
- RM11
- RM12.6

## Notes

DDE represents only the 4,4'-isomer.

Nondetect concentrations plotted as zero.

Data source: USEPA 2005 High Resolution Sediment Coring Program collected by Malcolm Pirnie, Inc.

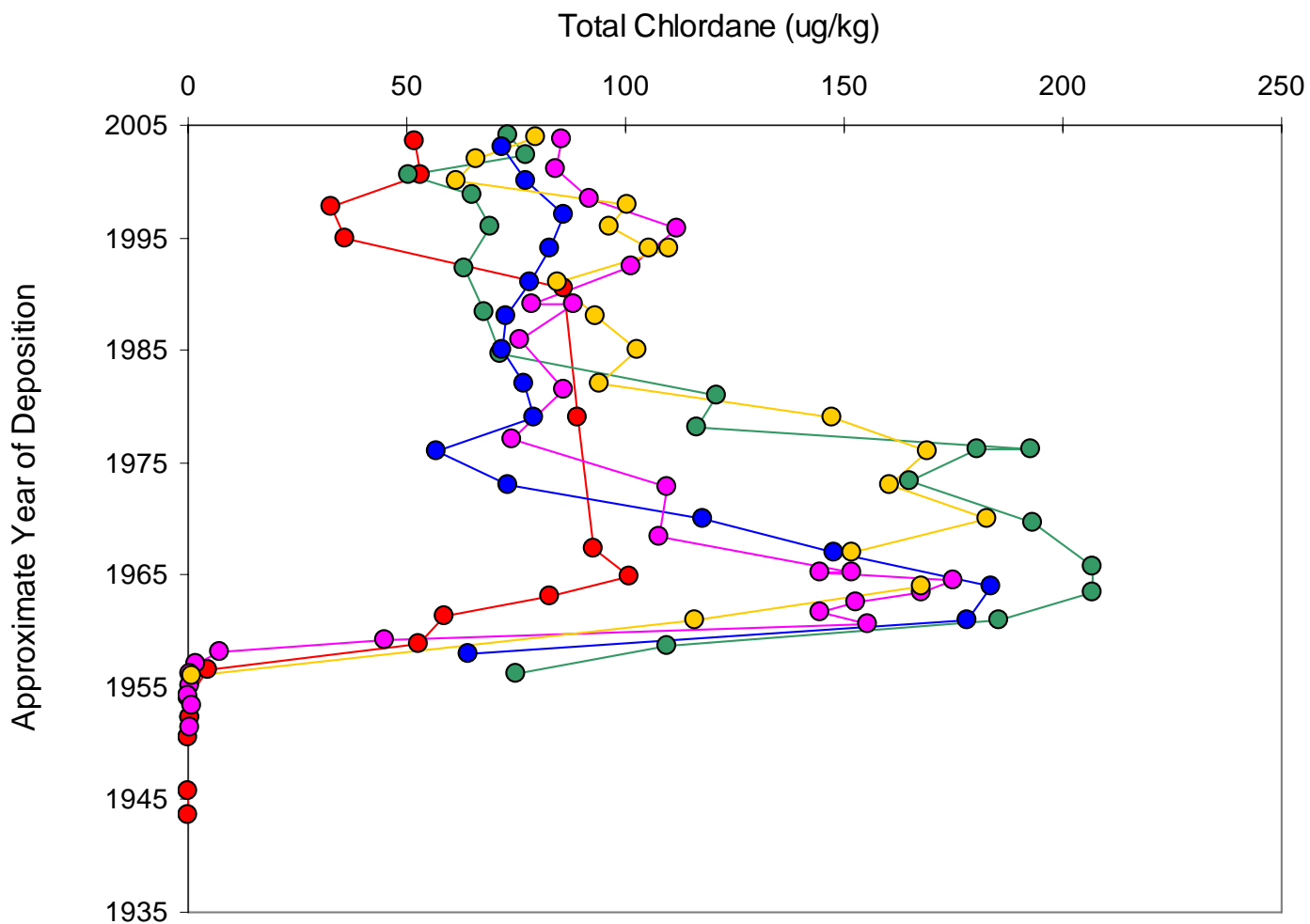


Dated Sediment Core Profile for 4,4'-DDE Concentration of Lower Passaic River High Resolution Sediment Cores

*Lower Passaic River Restoration Project*

Figure 13-4y

September 2008



### Legend

- RM1.4
- RM2.2
- RM7.8
- RM11
- RM12.6

### Notes

Total Chlordane represents the sum of trans-chlordane and cis-chlordane with nondetects equal to zero.

Nondetect concentrations plotted as zero.

Data source: USEPA 2005 High Resolution Sediment Coring Program collected by Malcolm Pirnie, Inc.

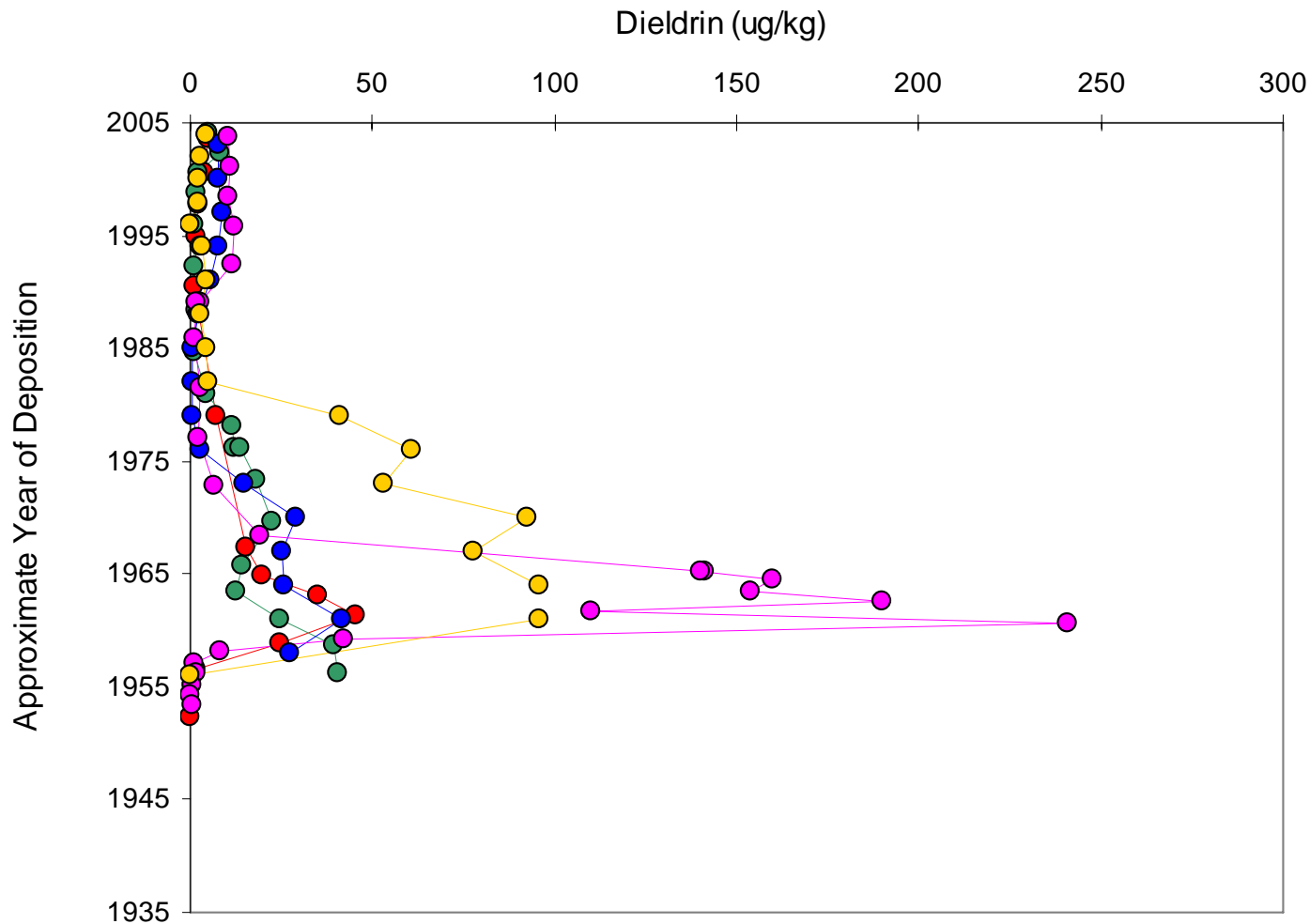


Dated Sediment Core Profile for Total Chlordane Concentration of Lower Passaic River High Resolution Sediment Cores

*Lower Passaic River Restoration Project*

Figure 13-4z

September 2008



### Legend

- RM1.4
- RM2.2
- RM7.8
- RM11
- RM12.6

### Notes

Nondetect concentrations plotted as zero.

Data source: USEPA 2005 High Resolution Sediment Coring Program collected by Malcolm Pirnie, Inc.



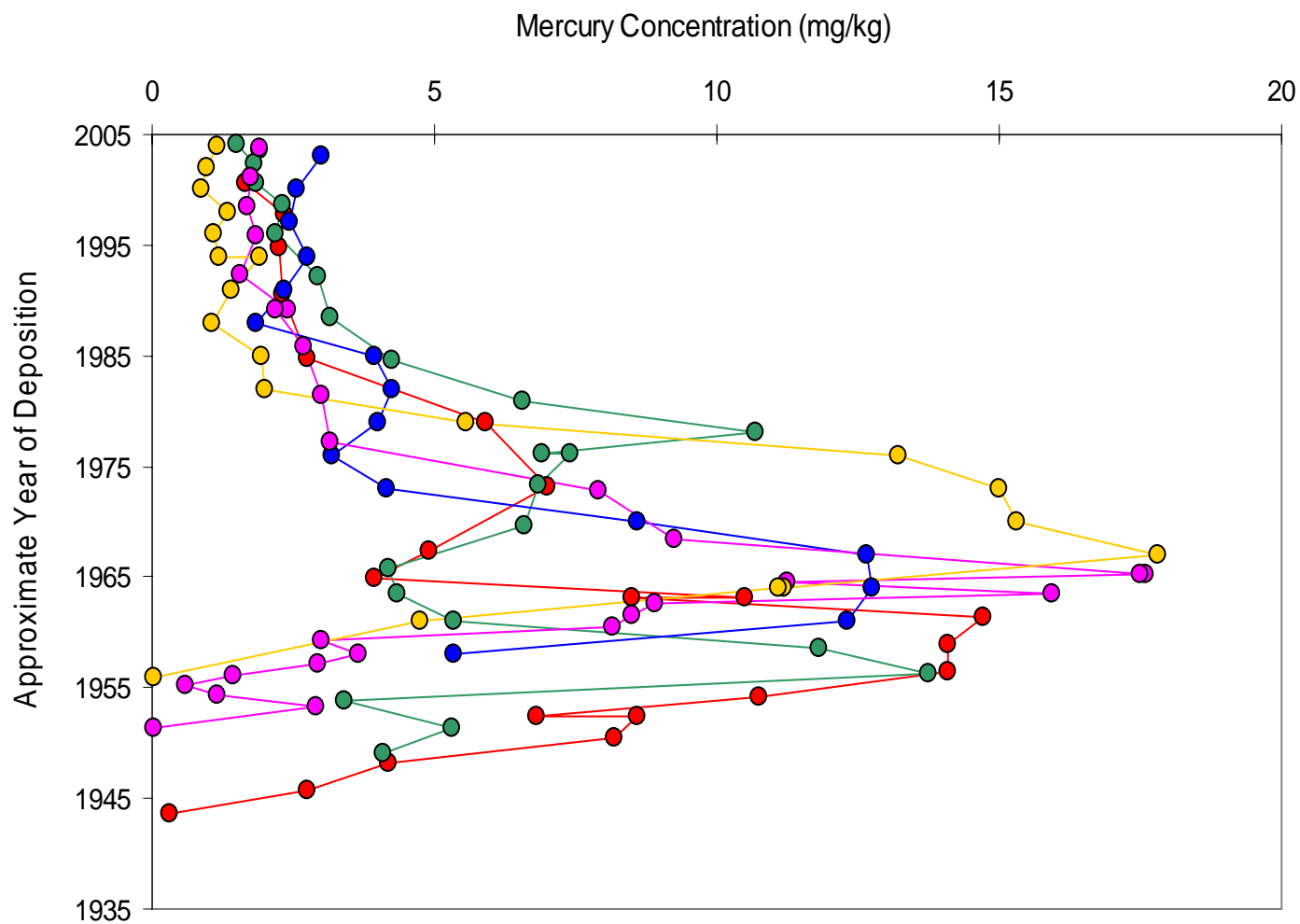
Dated Sediment Core Profile for Dieldrin Concentration of Lower Passaic River High Resolution Sediment Cores

*Lower Passaic River Restoration Project*

Figure 13-4aa

September 2008





## Legend

- RM1.4
- RM2.2
- RM7.8
- RM11
- RM12.6

## Notes

Nondetect concentrations plotted as zero.

Data source: USEPA 2005 High Resolution Sediment Coring Program collected by Malcolm Pirnie, Inc.

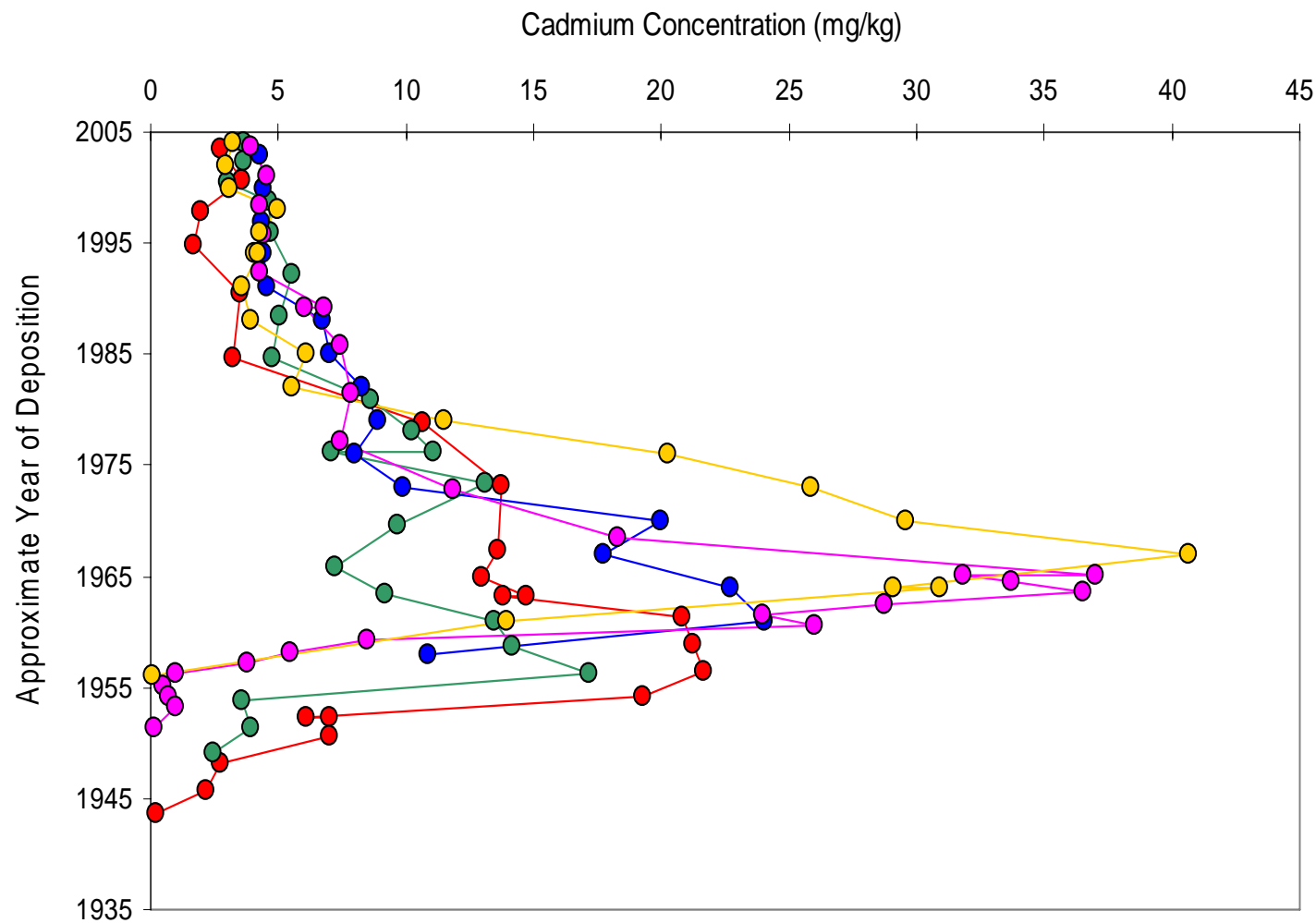


Dated Sediment Core Profile for Mercury Concentration of Lower Passaic River High Resolution Sediment Cores

*Lower Passaic River Restoration Project*

Figure 13-4ab

September 2008



## Legend

- RM1.4
- RM2.2
- RM7.8
- RM11
- RM12.6

## Notes

Nondetect concentrations plotted as zero.

Data source: USEPA 2005 High Resolution Sediment Coring Program collected by Malcolm Pirnie, Inc.

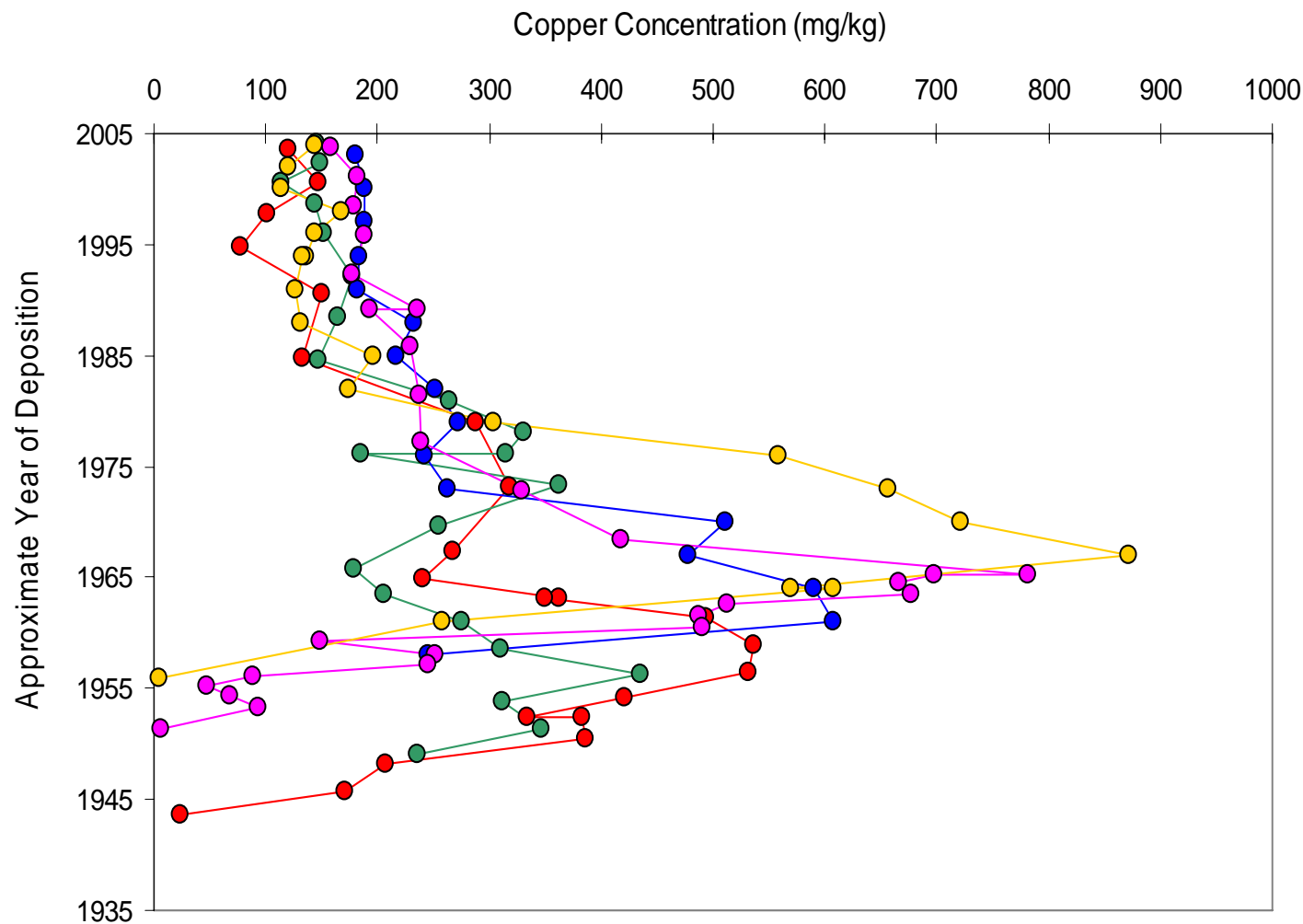


Dated Sediment Core Profile for Cadmium Concentration of Lower Passaic River High Resolution Sediment Cores

*Lower Passaic River Restoration Project*

Figure 13-4ac

September 2008



## Legend

- RM1.4
- RM2.2
- RM7.8
- RM11
- RM12.6

## Notes

Nondetect concentrations plotted as zero.

Data source: USEPA 2005 High Resolution Sediment Coring Program collected by Malcolm Pirnie, Inc.

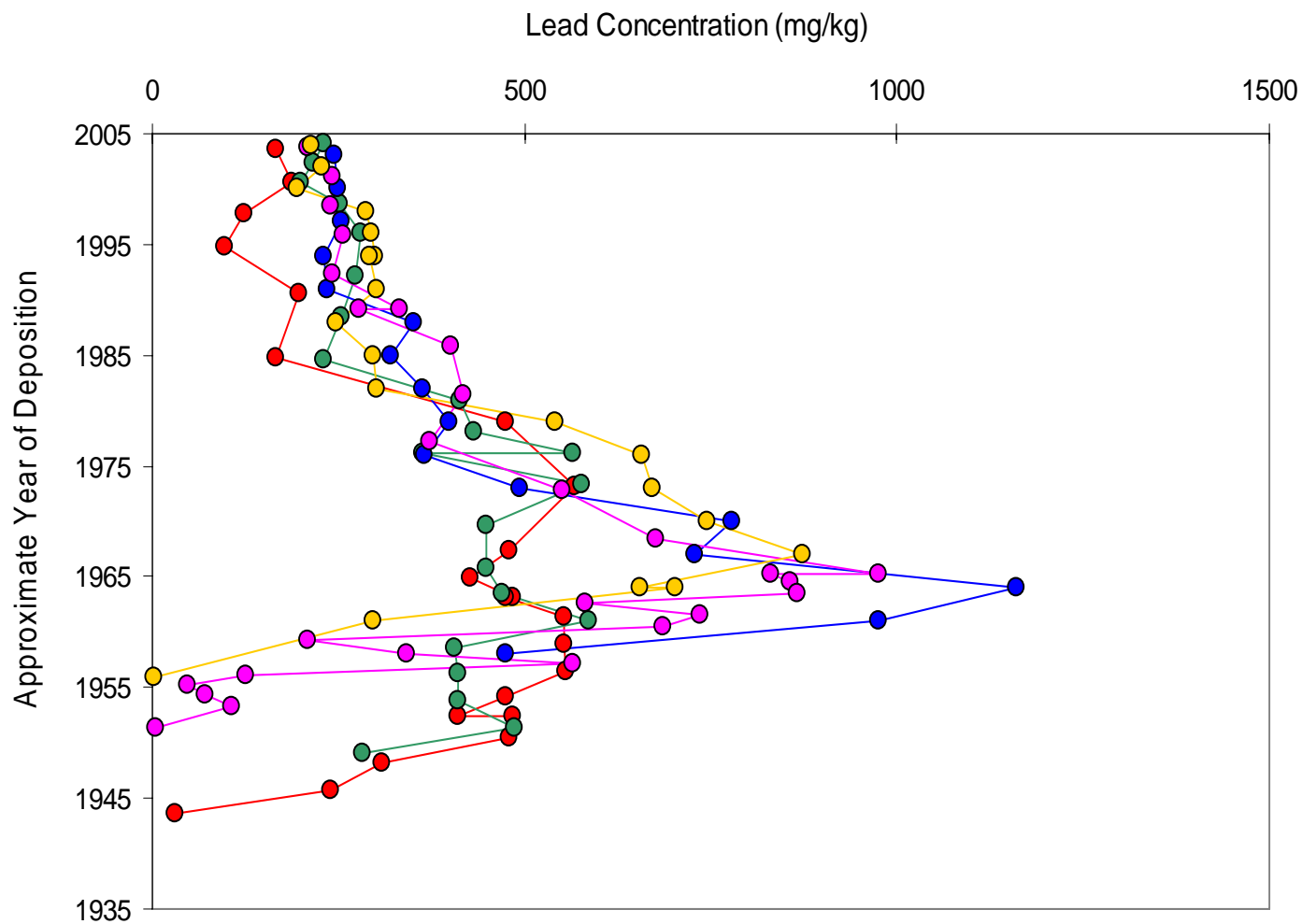


Dated Sediment Core Profile for Copper Concentration of Lower Passaic River High Resolution Sediment Cores

*Lower Passaic River Restoration Project*

Figure 13-4ad

September 2008



## Legend

- RM1.4
- RM2.2
- RM7.8
- RM11
- RM12.6

## Notes

Nondetect concentrations plotted as zero.

Data source: USEPA 2005 High Resolution Sediment Coring Program collected by Malcolm Pirnie, Inc.

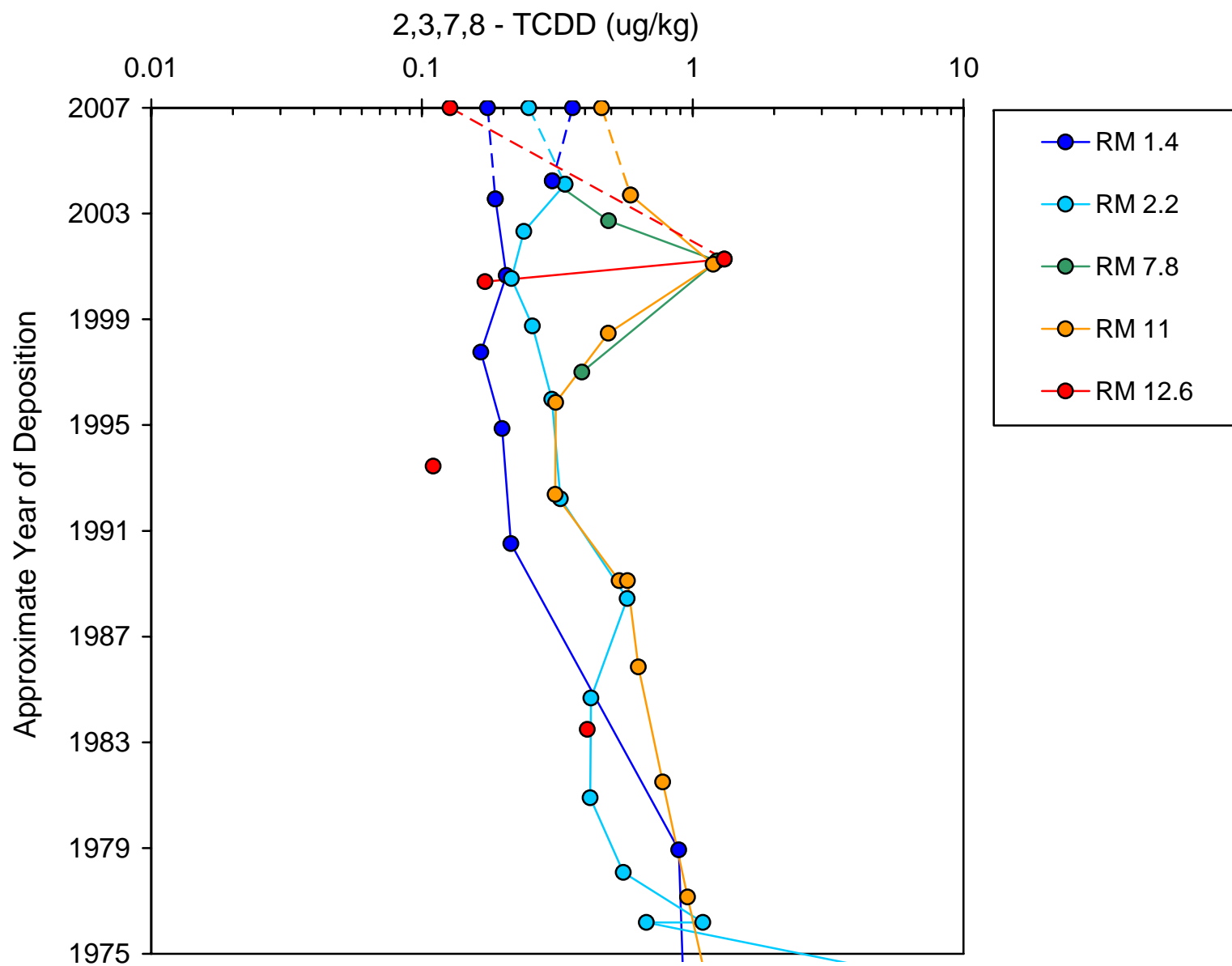


Dated Sediment Core Profile for Lead Concentration of Lower Passaic River High Resolution Sediment Cores

*Lower Passaic River Restoration Project*

Figure 13-4ae

September 2008

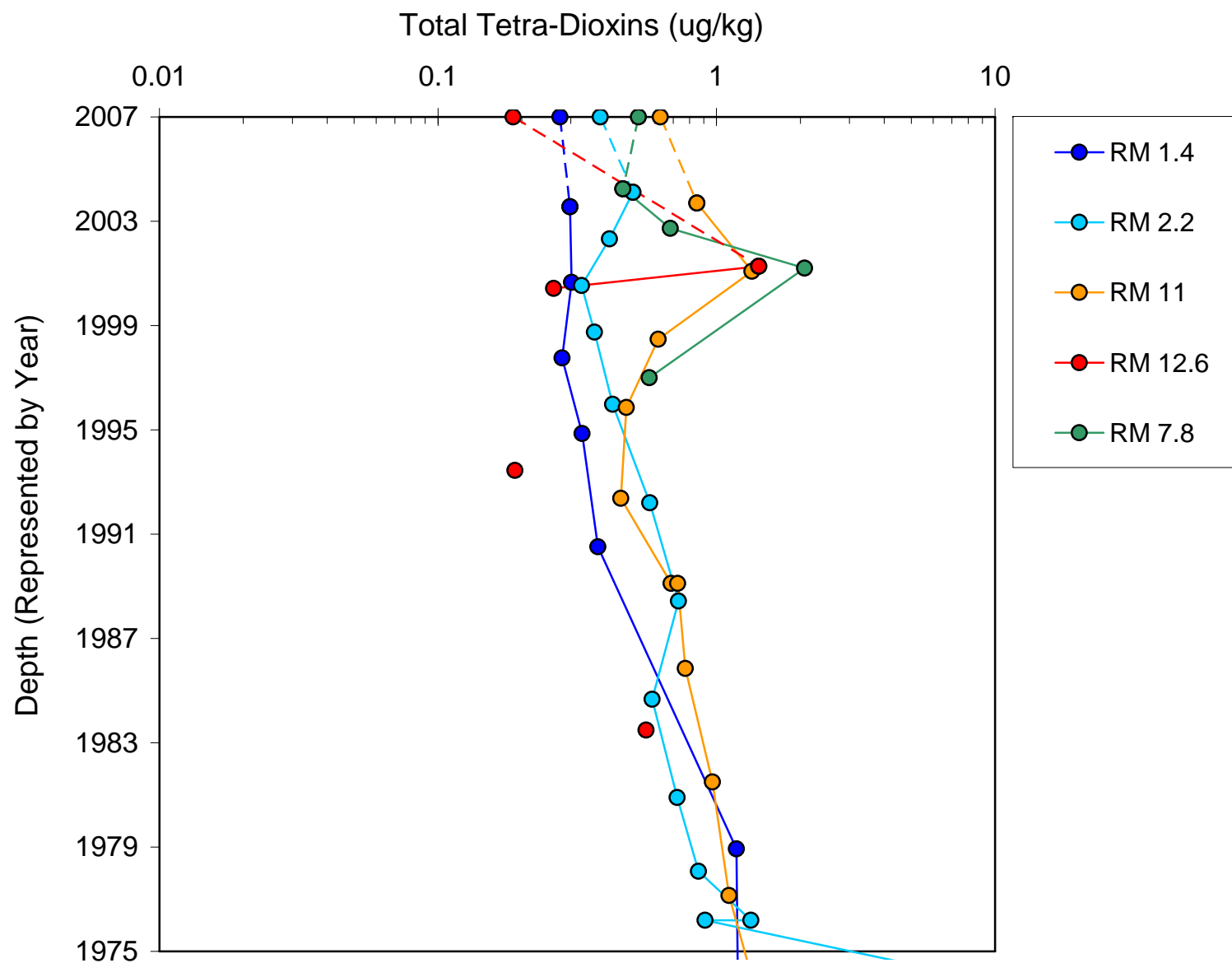


2,3,7,8-TCDD Downcore Profile  
Lower Passaic River Restoration Project

Figure 13-5

September 2008

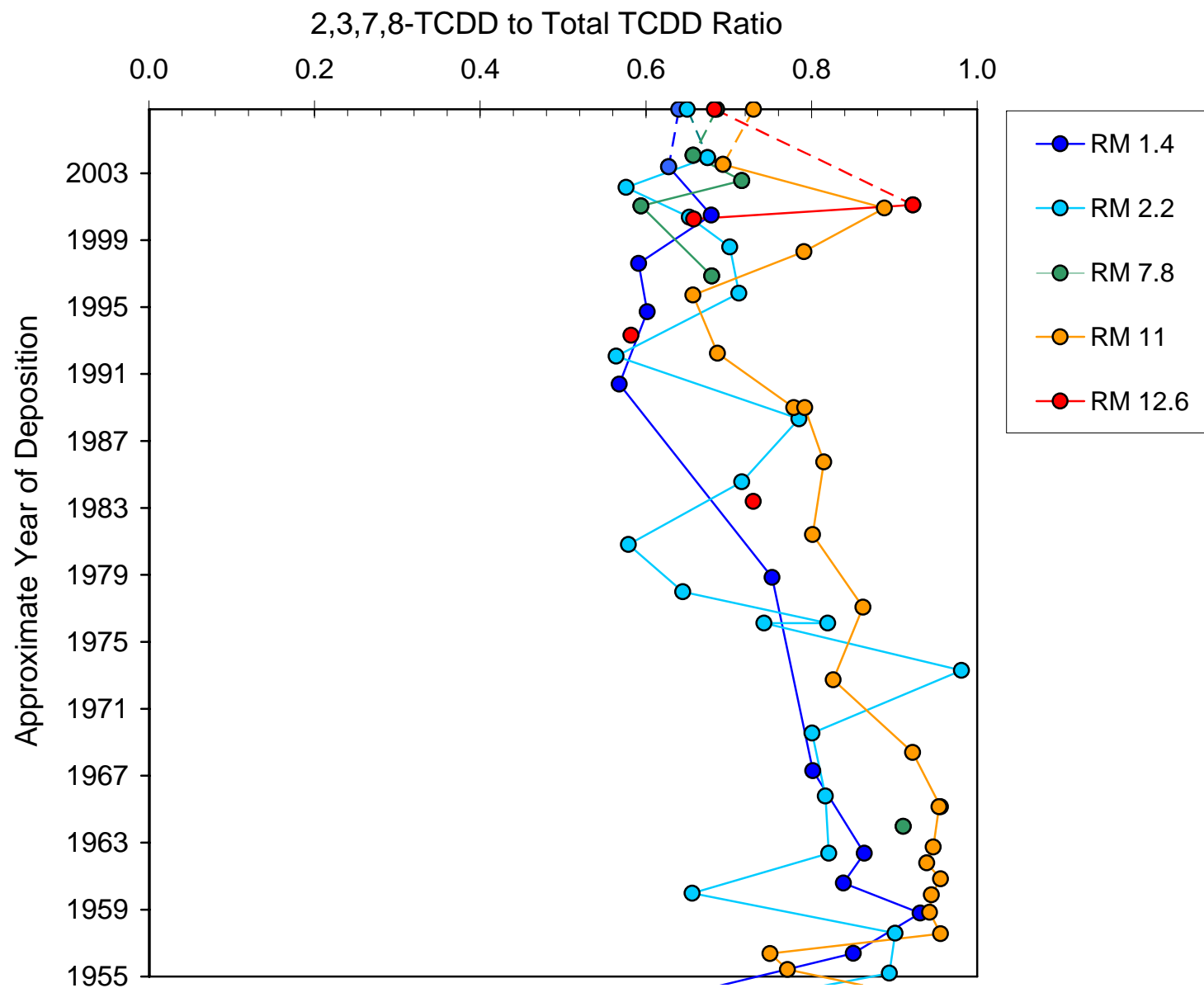




Total TCDD Downcore Profile  
Lower Passaic River Restoration Project

Figure 13-6

September 2008

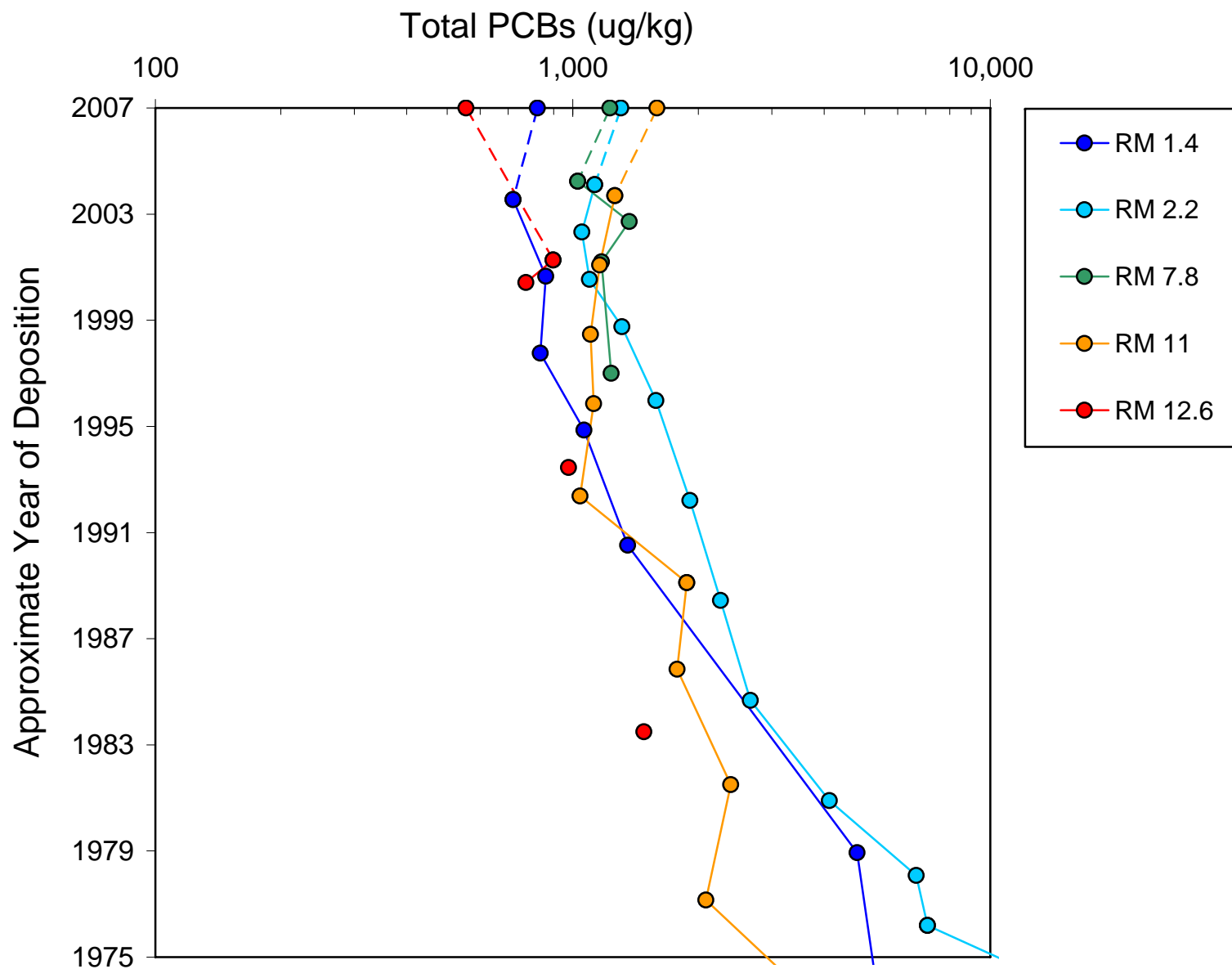


2,3,7,8-TCDD/Total TCDD Ratio Downcore Profile

*Lower Passaic River Restoration Project*

Figure 13-7

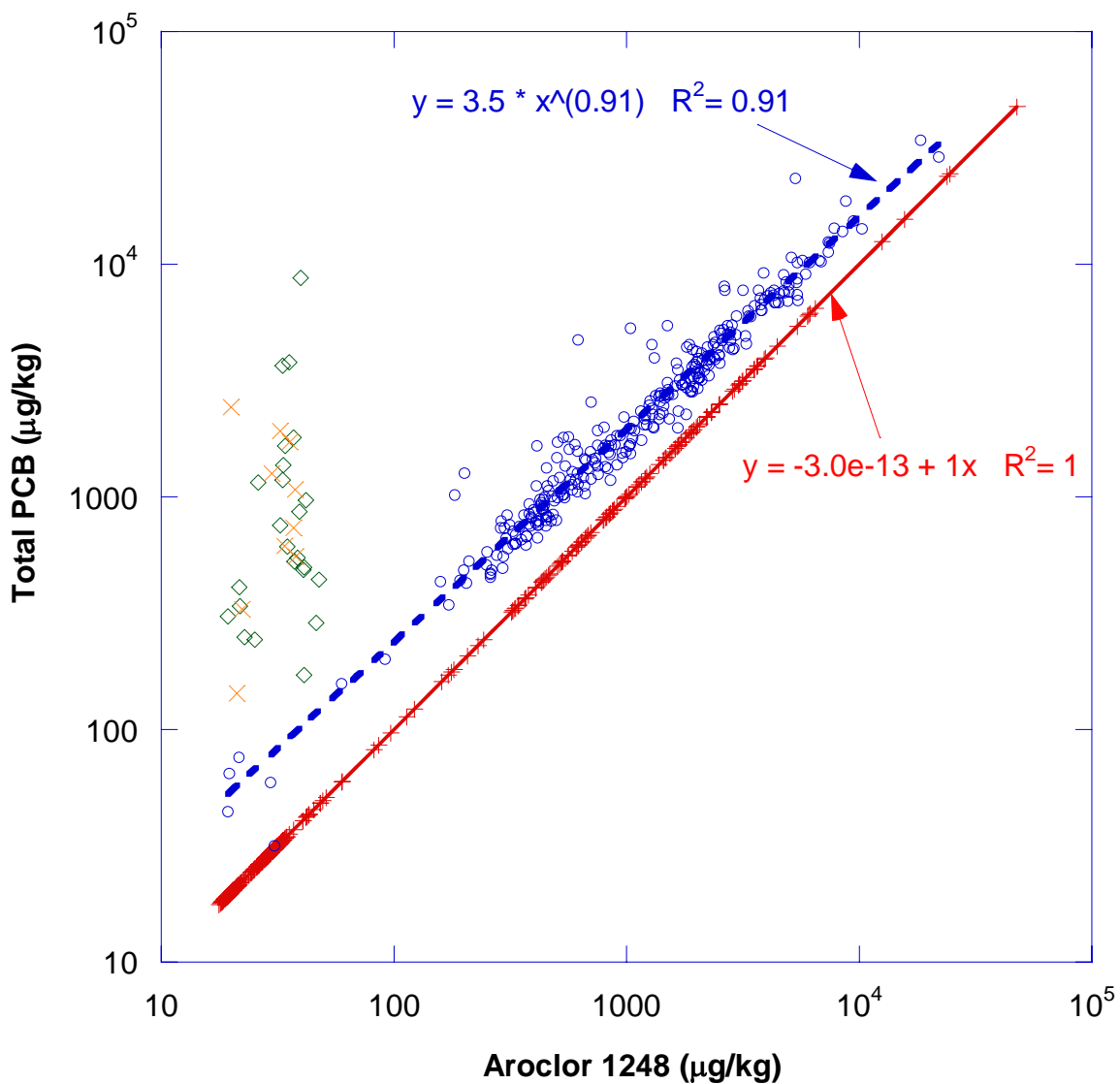
September 2008



Total PCBs Downcore Profile  
Lower Passaic River Restoration Project

Figure 13-8

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## Legend

- + TPCB = Aroclor 1248
- TPCB > Aroclor 1248
- ◇ High TPCB, Nondetect Aroclor 1248
- x High TPCB, Low Aroclor 1248

## Note:

Nondetect results for Aroclor 1248 set at ½ the detection limit.

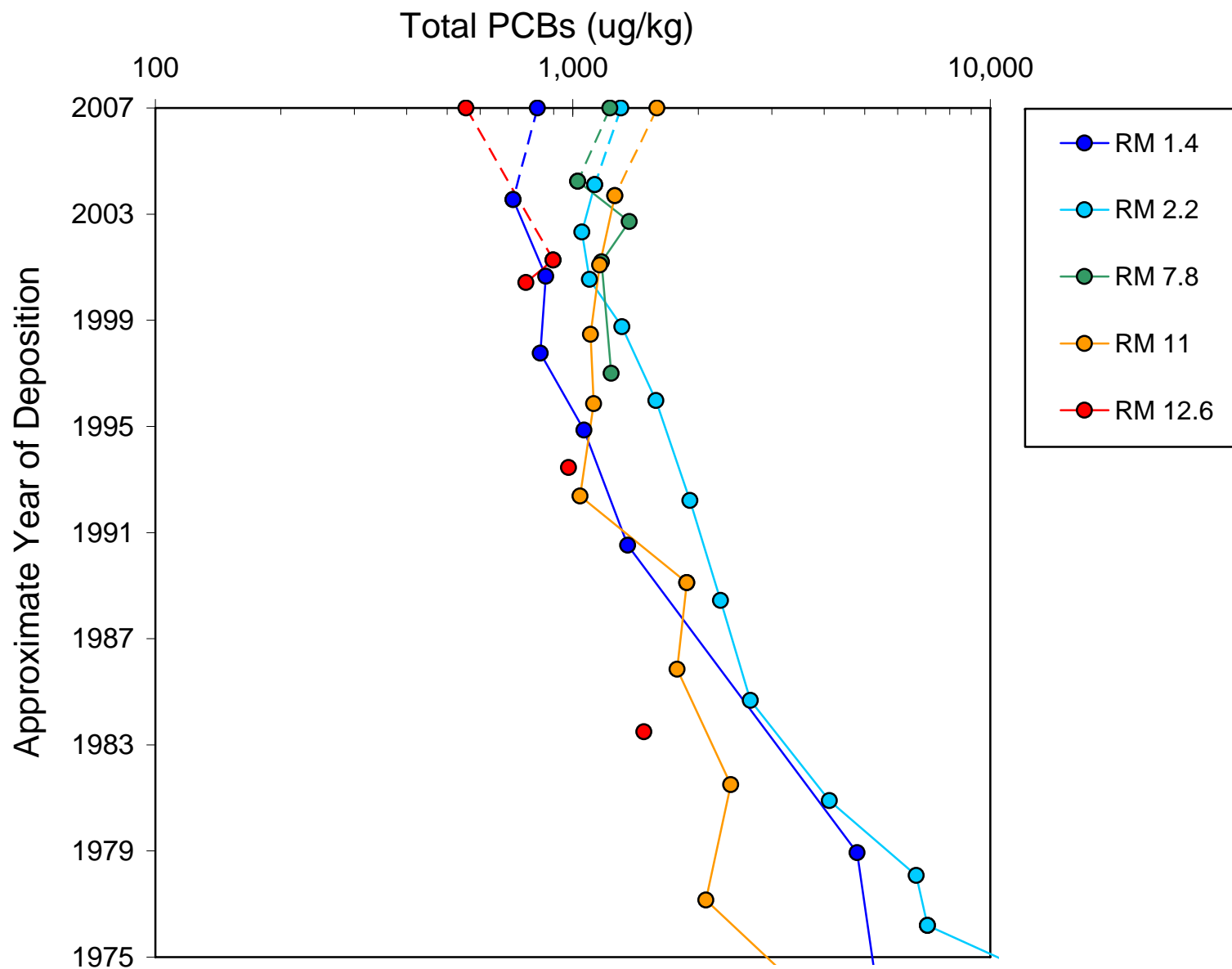


Aroclor 1248 and Total PCB Concentration Correlation

Lower Passaic River Restoration Project

Figure 13-9

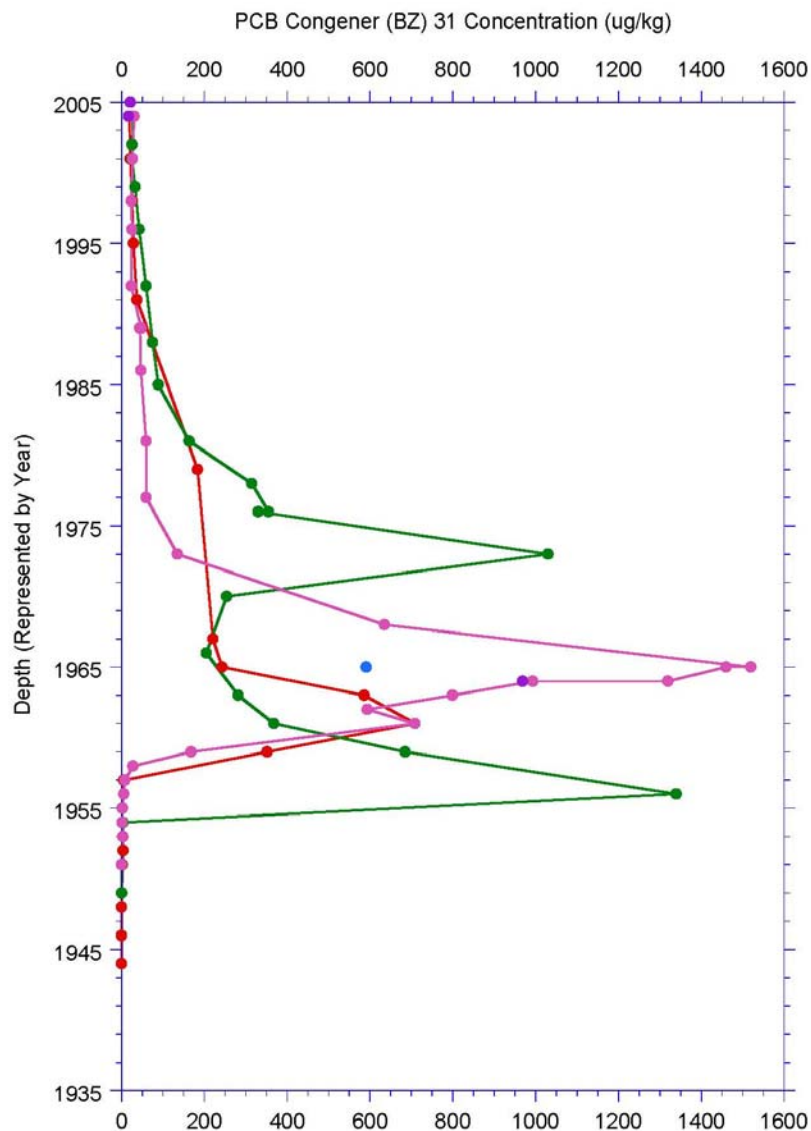
September 2008



Total PCBs Downcore Profile  
Lower Passaic River Restoration Project

Figure 13-10

September 2008



## Legend

- PCB Congener (BZ) 31 at RM1.4
- PCB Congener (BZ) 31 at RM2.2
- PCB Congener (BZ) 31 at RM7.8
- PCB Congener (BZ) 31 at RM11
- PCB Congener (BZ) 31 at RM12.6

## Notes

Nondetect concentrations plotted as zero.

Data source: USEPA 2005 High Resolution Sediment Coring Program collected by Malcolm Pirnie, Inc.



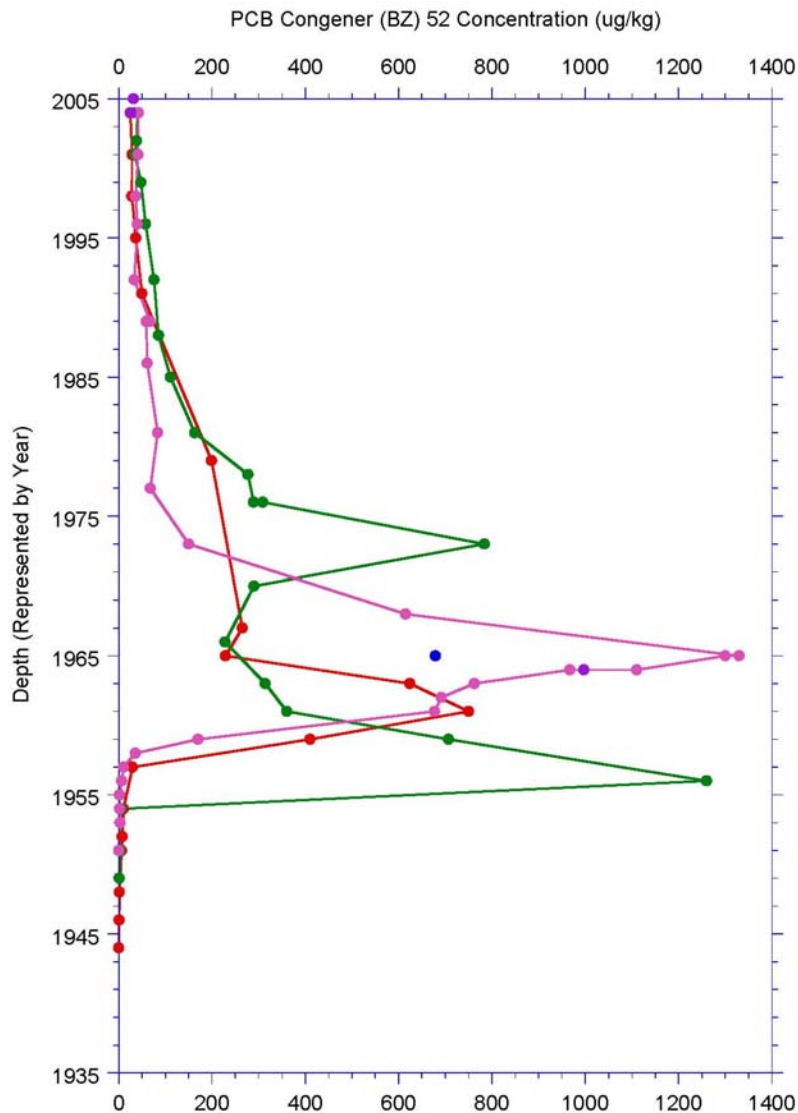
Downcore Profile for PCB Congener (BZ) 31

Lower Passaic River Restoration Project

Figure 13-11a

September 2008





## Legend

- PCB Congener (BZ) 52 at RM1.4
- PCB Congener (BZ) 52 at RM2.2
- PCB Congener (BZ) 52 at RM7.8
- PCB Congener (BZ) 52 at RM11
- PCB Congener (BZ) 52 at RM12.6

## Notes

Nondetect concentrations plotted as zero.

Data source: USEPA 2005 High Resolution Sediment Coring Program collected by Malcolm Pirnie, Inc.

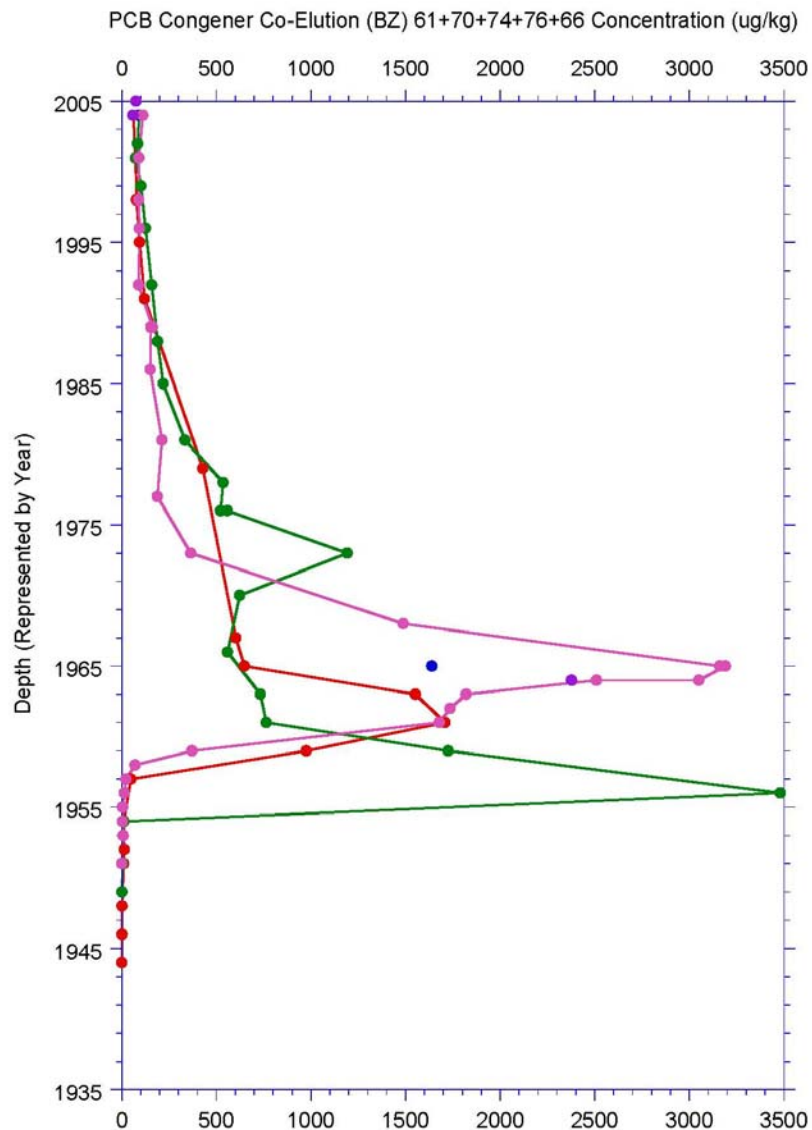


Downcore Profile for PCB Congener (BZ) 52

Lower Passaic River Restoration Project

Figure 13-11b

September 2008



## Legend

- PCB Congener (BZ) 61+70+74+76+66 at RM1.4
- PCB Congener (BZ) 61+70+74+76+66 at RM2.2
- PCB Congener (BZ) 61+70+74+76+66 at RM7.8
- PCB Congener (BZ) 61+70+74+76+66 at RM11
- PCB Congener (BZ) 61+70+74+76+66 at RM12.6

## Notes

Nondetect concentrations plotted as zero.

Data source: USEPA 2005 High Resolution Sediment Coring Program collected by Malcolm Pirnie, Inc.

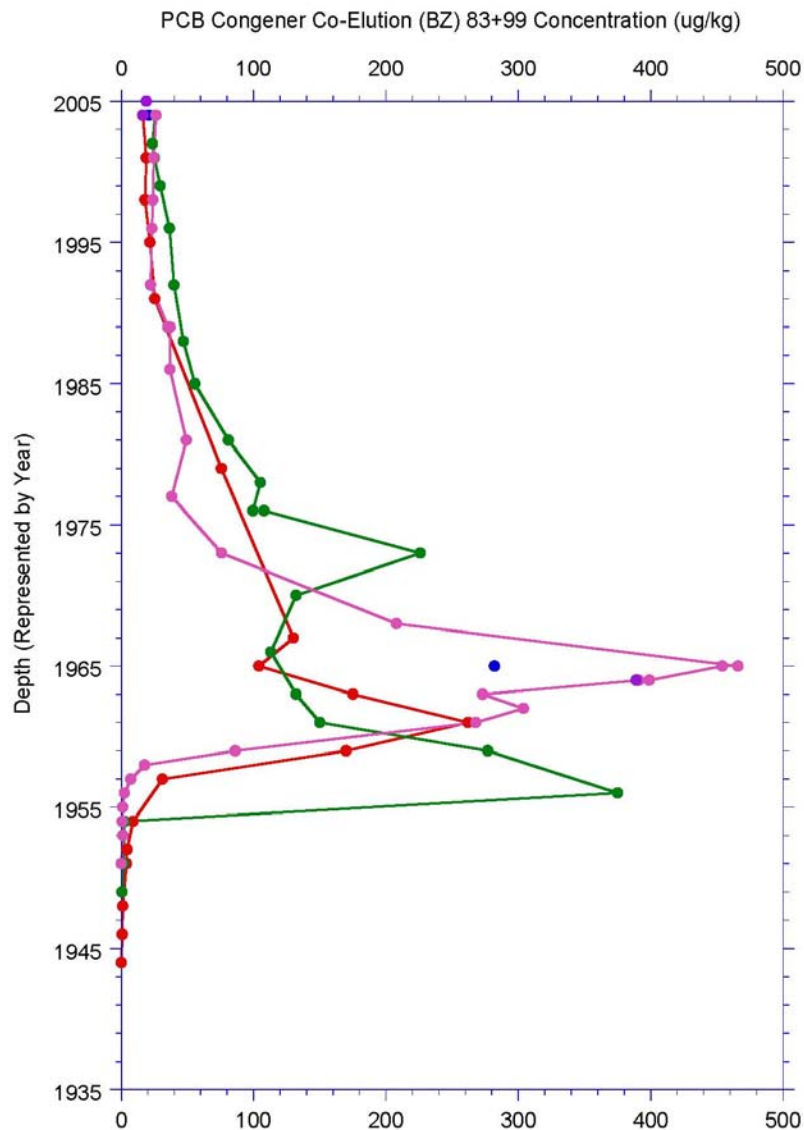


Downcore Profile for PCB Congener (BZ) 61+70+74+76+66

Lower Passaic River Restoration Project

Figure 13-11c

September 2008



## Legend

- PCB Congener (BZ) 83+99 at RM1.4
- PCB Congener (BZ) 83+99 at RM2.2
- PCB Congener (BZ) 83+99 at RM7.8
- PCB Congener (BZ) 83+99 at RM11
- PCB Congener (BZ) 83+99 at RM12.6

## Notes

Nondetect concentrations plotted as zero.

Data source: USEPA 2005 High Resolution Sediment Coring Program collected by Malcolm Pirnie, Inc.

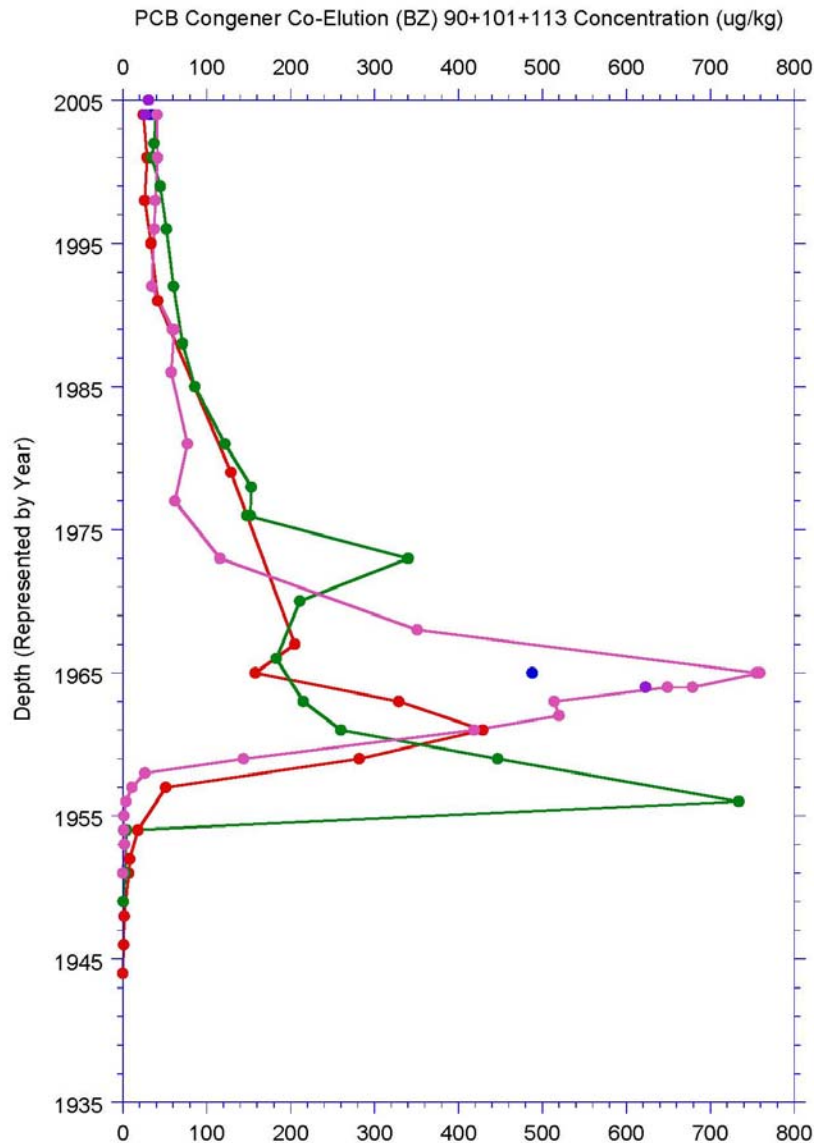


Downcore Profile for PCB Congener (BZ) 83+99

Lower Passaic River Restoration Project

Figure 13-11d

September 2008



## Legend

- PCB Congener (BZ) 90+101+113 at RM1.4
- PCB Congener (BZ) 90+101+113 at RM2.2
- PCB Congener (BZ) 90+101+113 at RM7.8
- PCB Congener (BZ) 90+101+113 at RM11
- PCB Congener (BZ) 90+101+113 at RM12.6

## Notes

Nondetect concentrations plotted as zero.

Data source: USEPA 2005 High Resolution Sediment Coring Program collected by Malcolm Pirnie, Inc.

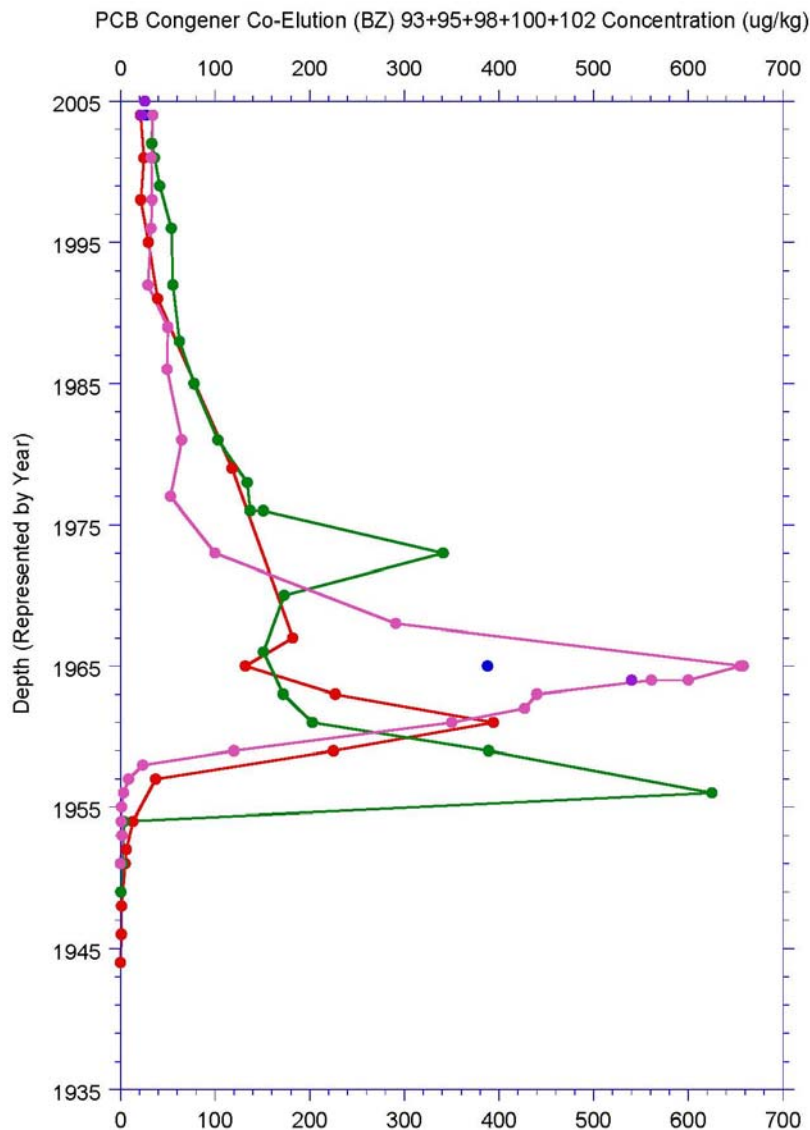


Downcore Profile for PCB Congener (BZ) 90+101+113

Lower Passaic River Restoration Project

Figure 13-11e

September 2008



## Legend

- PCB Congener (BZ)  
93+95+98+100+102 at  
RM1.4
- PCB Congener (BZ)  
93+95+98+100+102 at  
RM2.2
- PCB Congener (BZ)  
93+95+98+100+102 at  
RM7.8
- PCB Congener (BZ)  
93+95+98+100+102 at  
RM11
- PCB Congener (BZ)  
93+95+98+100+102 at  
RM12.6

## Notes

Nondetect concentrations plotted as zero.

Data source: USEPA 2005  
High Resolution Sediment  
Coring Program collected by  
Malcolm Pirnie, Inc.

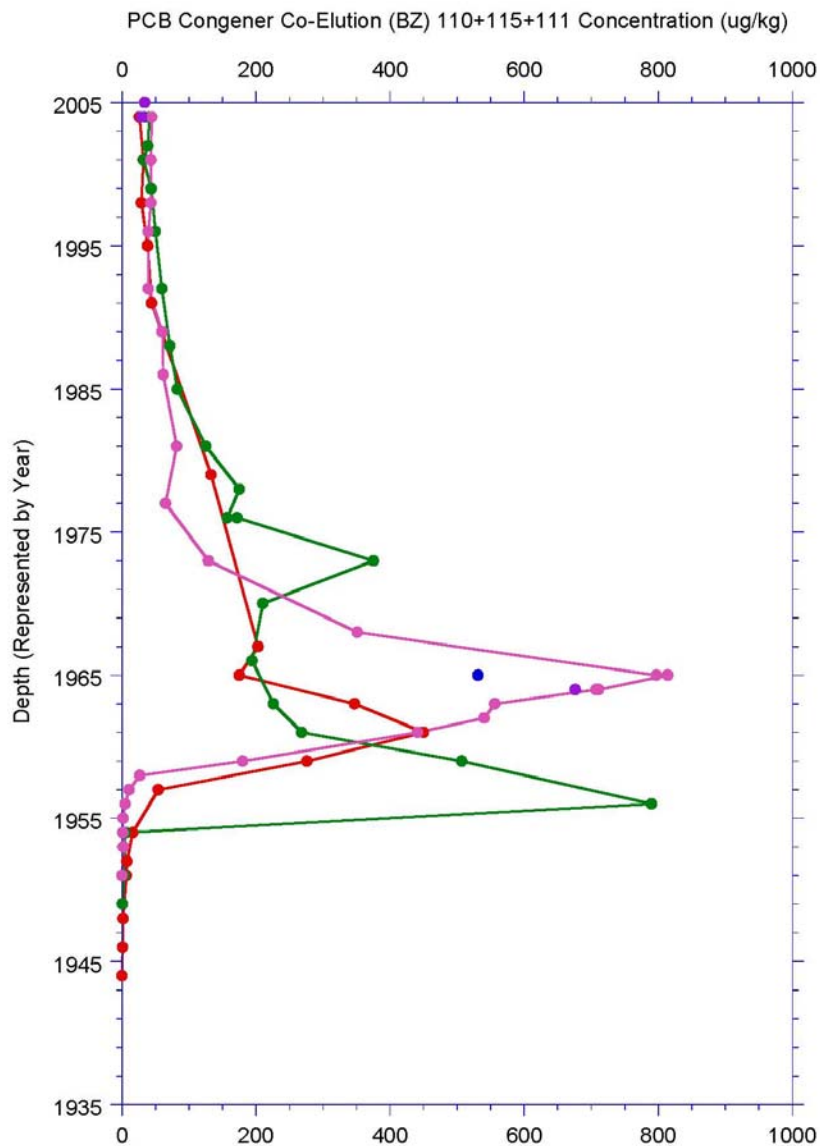


Downcore Profile for PCB Congener (BZ) 93+95+98+100+102

*Lower Passaic River Restoration Project*

Figure 13-11f

September 2008



## Legend

- PCB Congener (BZ) 110+115+111 at RM1.4
- PCB Congener (BZ) 110+115+111 at RM2.2
- PCB Congener (BZ) 110+115+111 at RM7.8
- PCB Congener (BZ) 110+115+111 at RM11
- PCB Congener (BZ) 110+115+111 at RM12.6

## Notes

Nondetect concentrations plotted as zero.

Data source: USEPA 2005 High Resolution Sediment Coring Program collected by Malcolm Pirnie, Inc.



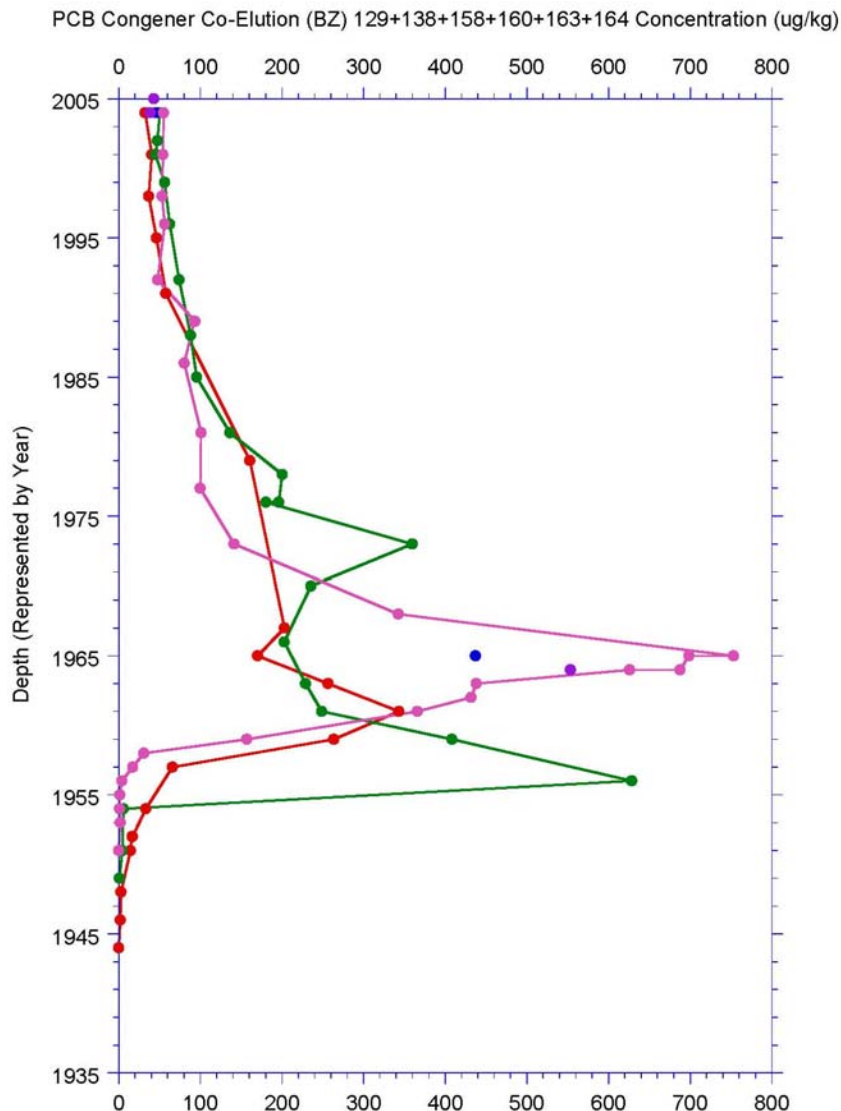
Downcore Profile for PCB Congener (BZ) 110+115+111

Lower Passaic River Restoration Project

Figure 13-11g

September 2008





## Legend

- PCB Congener (BZ)  
129+138+158+  
160+163+164 at RM1.4
- PCB Congener (BZ)  
129+138+158+  
160+163+164 at RM2.2
- PCB Congener (BZ)  
129+138+158+  
160+163+164 at RM7.8
- PCB Congener (BZ)  
129+138+158+  
160+163+164 at RM11
- PCB Congener (BZ)  
129+138+158+  
160+163+164 at  
RM12.6

## Notes

Nondetect concentrations plotted as zero.

Data source: USEPA 2005  
High Resolution Sediment  
Coring Program collected by  
Malcolm Pirnie, Inc.

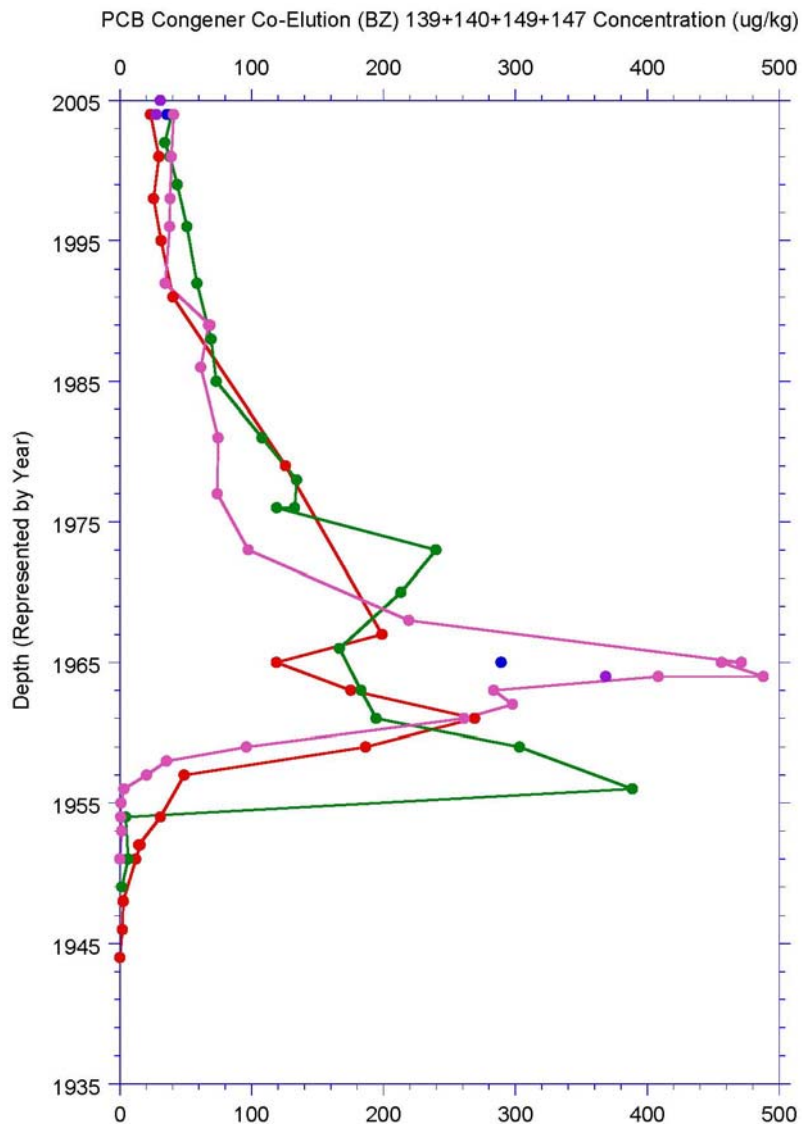


Downcore Profile for PCB Congener (BZ) 129+138+158+160+163+164

Lower Passaic River Restoration Project

Figure 13-11h

September 2008



## Legend

- PCB Congener (BZ) 139+140+149+147 at RM1.4
- PCB Congener (BZ) 139+140+149+147 at RM2.2
- PCB Congener (BZ) 139+140+149+147 at RM7.8
- PCB Congener (BZ) 139+140+149+147 at RM11
- PCB Congener (BZ) 139+140+149+147 at RM12.6

## Notes

Nondetect concentrations plotted as zero.

Data source: USEPA 2005 High Resolution Sediment Coring Program collected by Malcolm Pirnie, Inc.

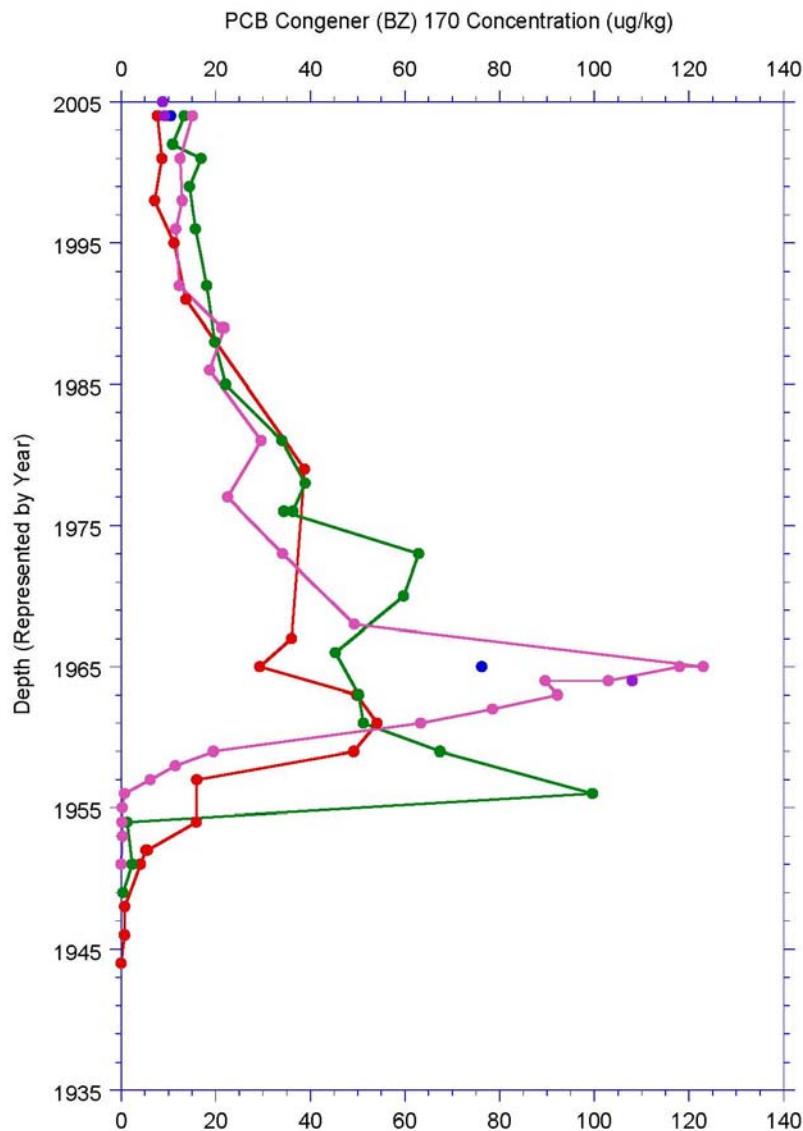


Downcore Profile for PCB Congener (BZ) 139+140+149+147

Lower Passaic River Restoration Project

Figure 13-11i

September 2008



## Legend

- PCB Congener (BZ) 170 at RM1.4
- PCB Congener (BZ) 170 at RM2.2
- PCB Congener (BZ) 170 at RM7.8
- PCB Congener (BZ) 170 at RM11
- PCB Congener (BZ) 170 at RM12.6

## Notes

Nondetect concentrations plotted as zero.

Data source: USEPA 2005 High Resolution Sediment Coring Program collected by Malcolm Pirnie, Inc.

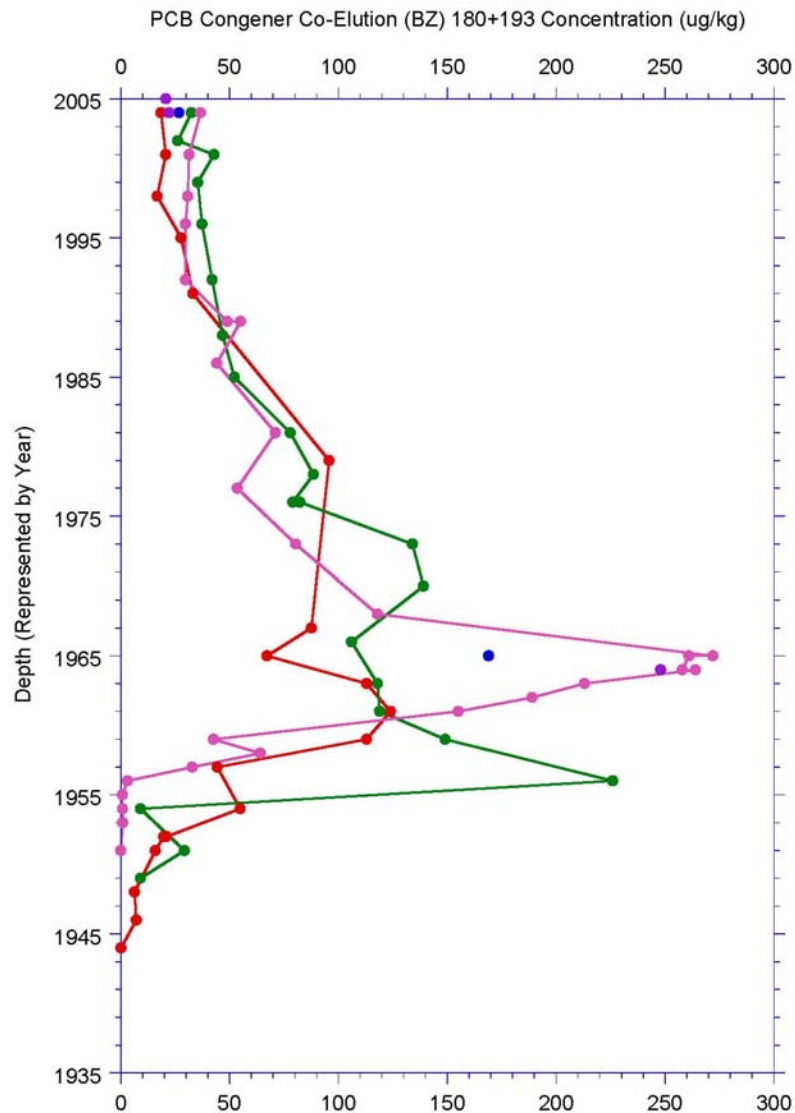


Downcore Profile for PCB Congener (BZ) 170

Lower Passaic River Restoration Project

Figure 13-11j

September 2008



## Legend

- PCB Congener (BZ) 180+193 at RM1.4
- PCB Congener (BZ) 180+193 at RM2.2
- PCB Congener (BZ) 180+193 at RM7.8
- PCB Congener (BZ) 180+193 at RM11
- PCB Congener (BZ) 180+193 at RM12.6

## Notes

Nondetect concentrations plotted as zero.

Data source: USEPA 2005 High Resolution Sediment Coring Program collected by Malcolm Pirnie, Inc.

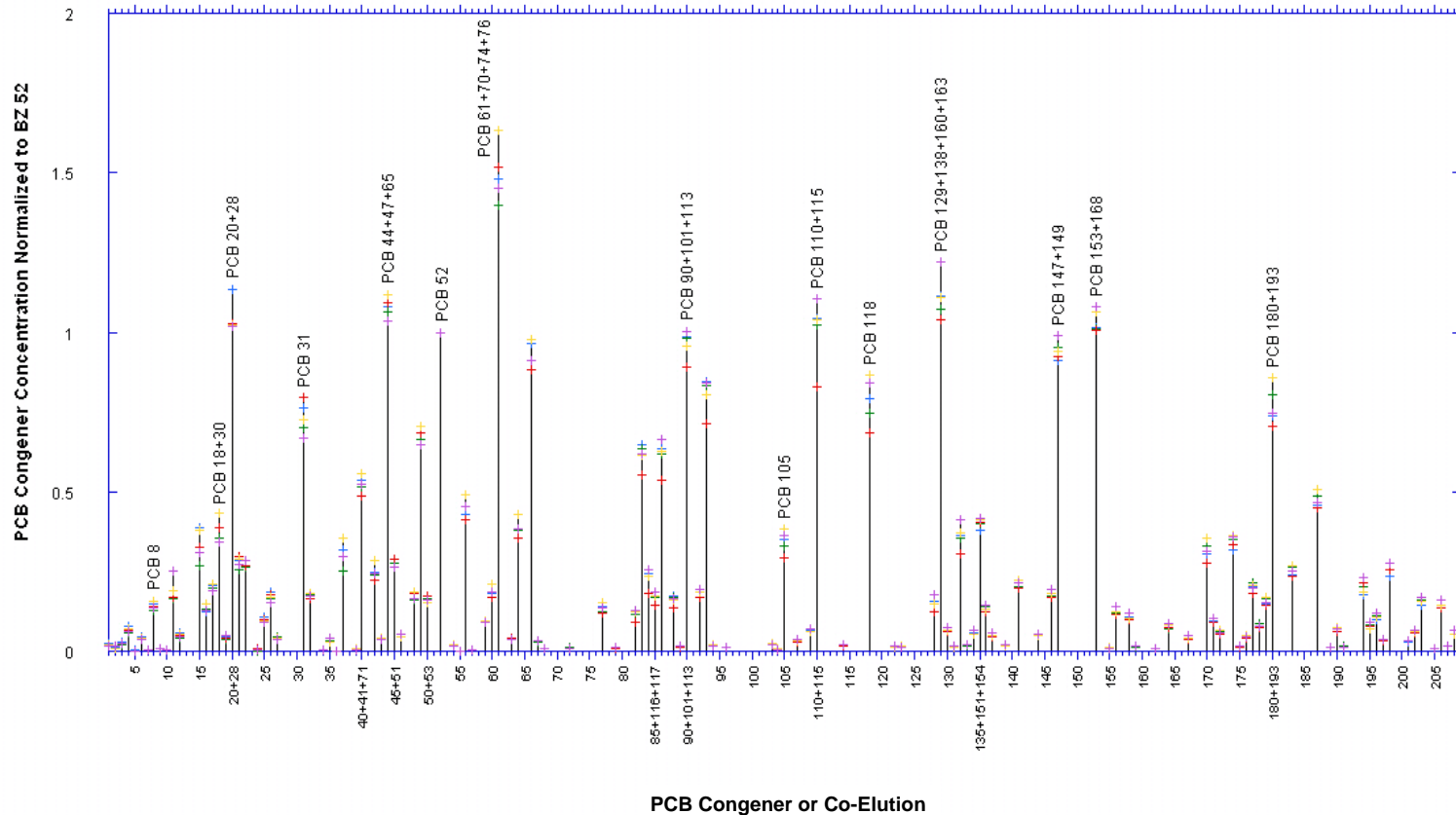


Downcore Profile for PCB Congener (BZ) 180+193

Lower Passaic River Restoration Project

Figure 13-11k

September 2008



Normalized PCB Congeners for the Lower Passaic River Surface Sediments

Lower Passaic River Restoration Project

Figure 13-12

September 2008

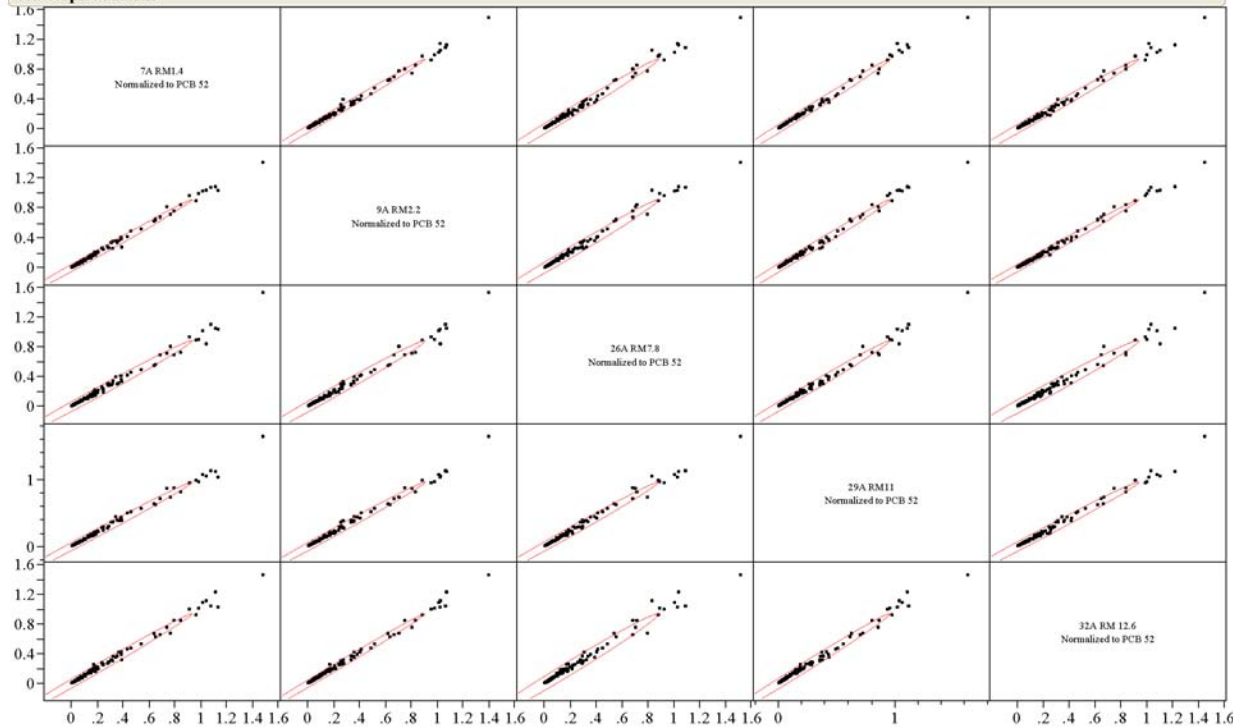
Multivariate LPR High Res Core Tops All Data

Correlations

	7A RM1.4 Normalized to PCB 52	9A RM2.2 Normalized to PCB 52	26A RM7.8 Normalized to PCB 52	29A RM11 Normalized to PCB 52	32A RM 12.6 Normalized to PCB 52
7A RM1.4 Normalized to PCB 52	1.0000	0.9975	0.9950	0.9965	0.9963
9A RM2.2 Normalized to PCB 52	0.9975	1.0000	0.9940	0.9963	0.9974
26A RM7.8 Normalized to PCB 52	0.9950	0.9940	1.0000	0.9953	0.9908
29A RM11 Normalized to PCB 52	0.9965	0.9963	0.9953	1.0000	0.9951
32A RM 12.6 Normalized to PCB 52	0.9963	0.9974	0.9908	0.9951	1.0000

24 rows not used due to missing or excluded values or frequency or weight variables missing, negative or less than one.

Scatterplot Matrix



Legend

- Normalized PCB Congeners

Notes

Identification numbers 7A, 9A, 26A, 29A, and 32A correspond to field location numbers.

PCB Congeners normalized to BZ 52.

Data Source: JMP Version 6.0.0 “Statistical Discovery” from SAS Institute Inc.



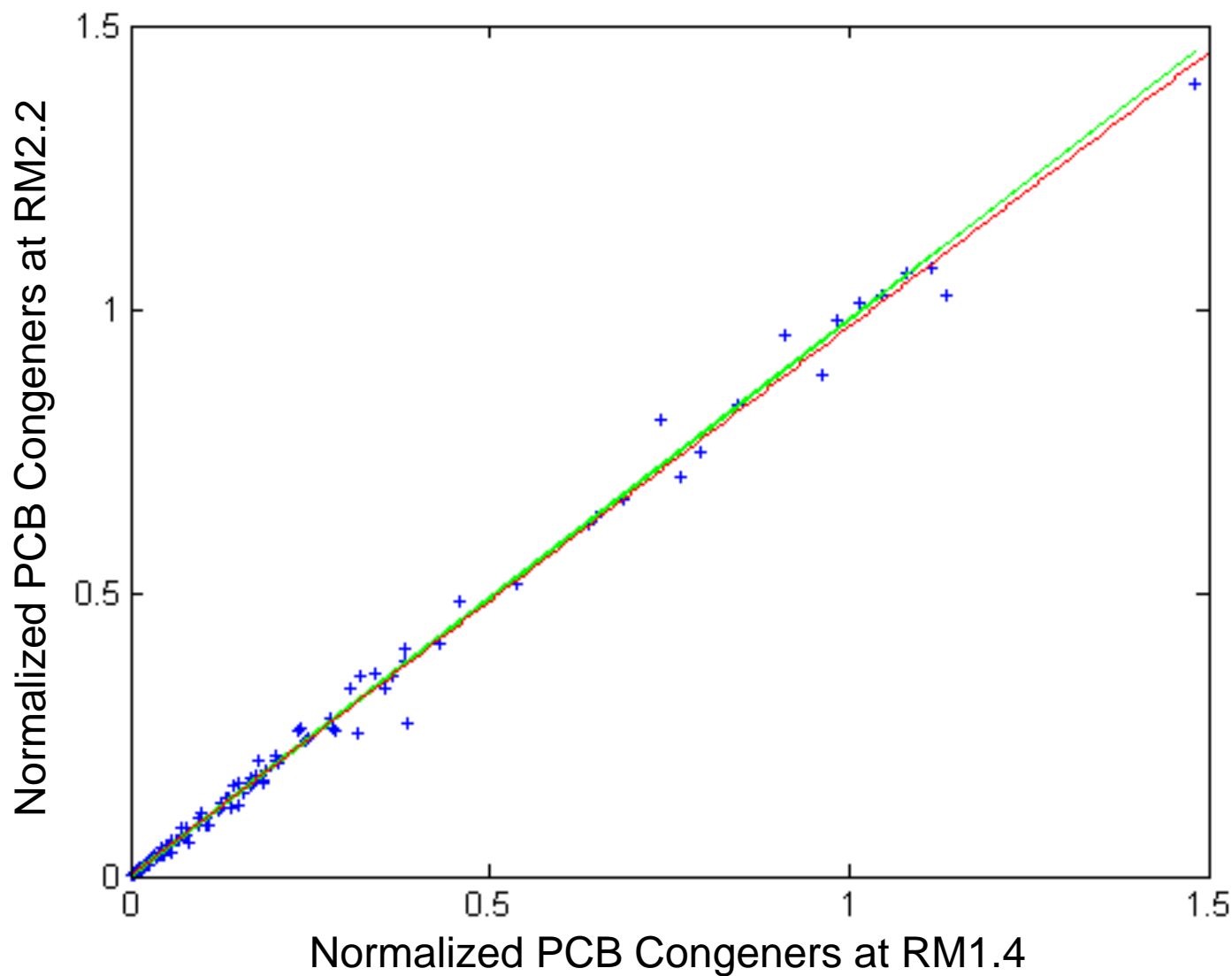
Correlation of PCB Congeners for the Lower Passaic River Surface Sediments

Lower Passaic River Restoration Project

Figure 13-13

September 2008





## Legend

- + Normalized PCB Congeners
- Linear Regression
- Robust Regression

## Notes

Linear Regression:  
 $y = 0.97x + 0.0015$   
 $R^2 = 0.99505$

Robust Regression:  
 $y = 0.9814x + (-0.0002)$   
 $R^2 = 0.99942$

PCB Congeners  
 normalized to BZ 52.

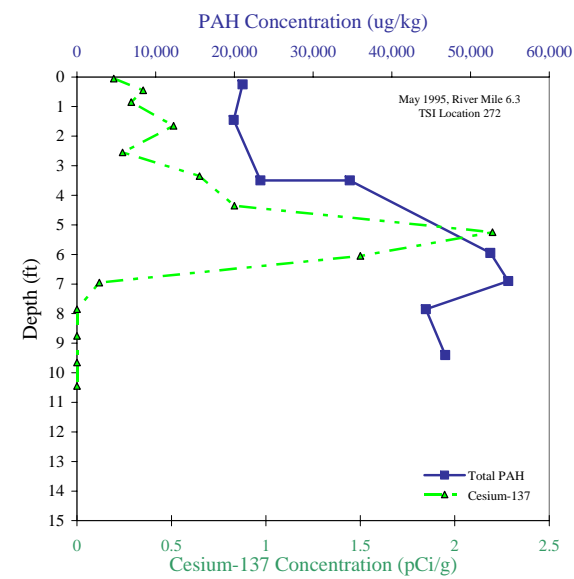
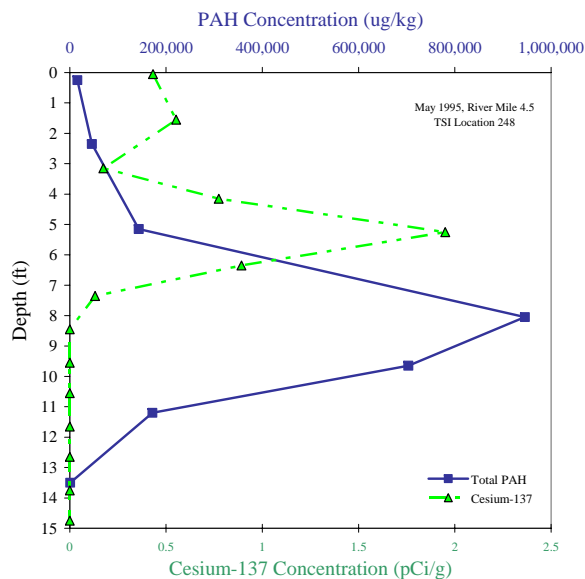
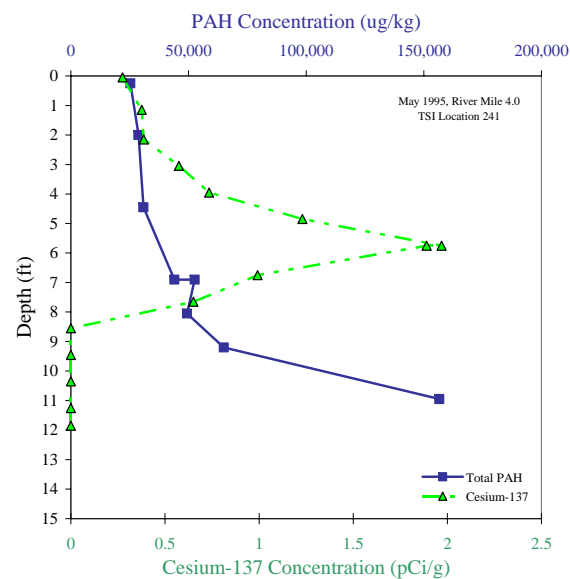
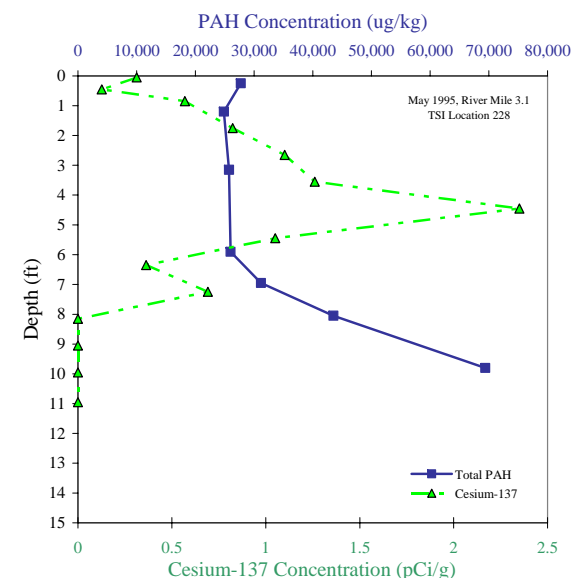
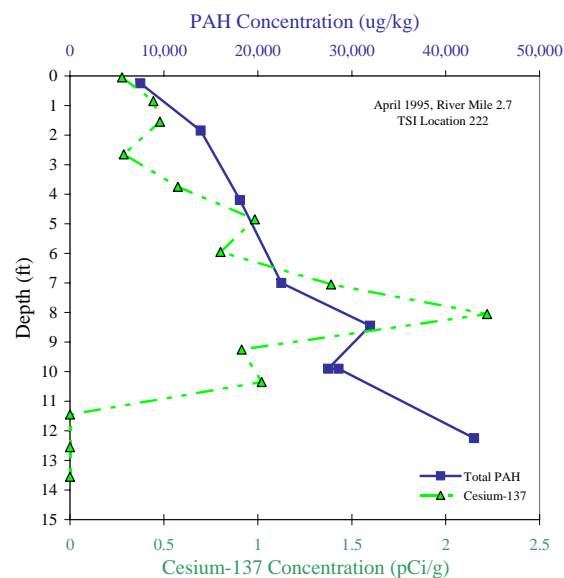
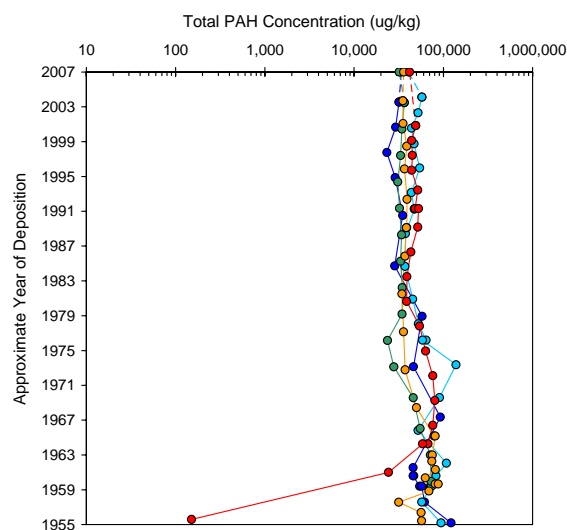


Comparison of Linear Regression and Robust Regression for PCB  
 Congeners in the Lower Passaic River Surface Sediments

*Lower Passaic River Restoration Project*

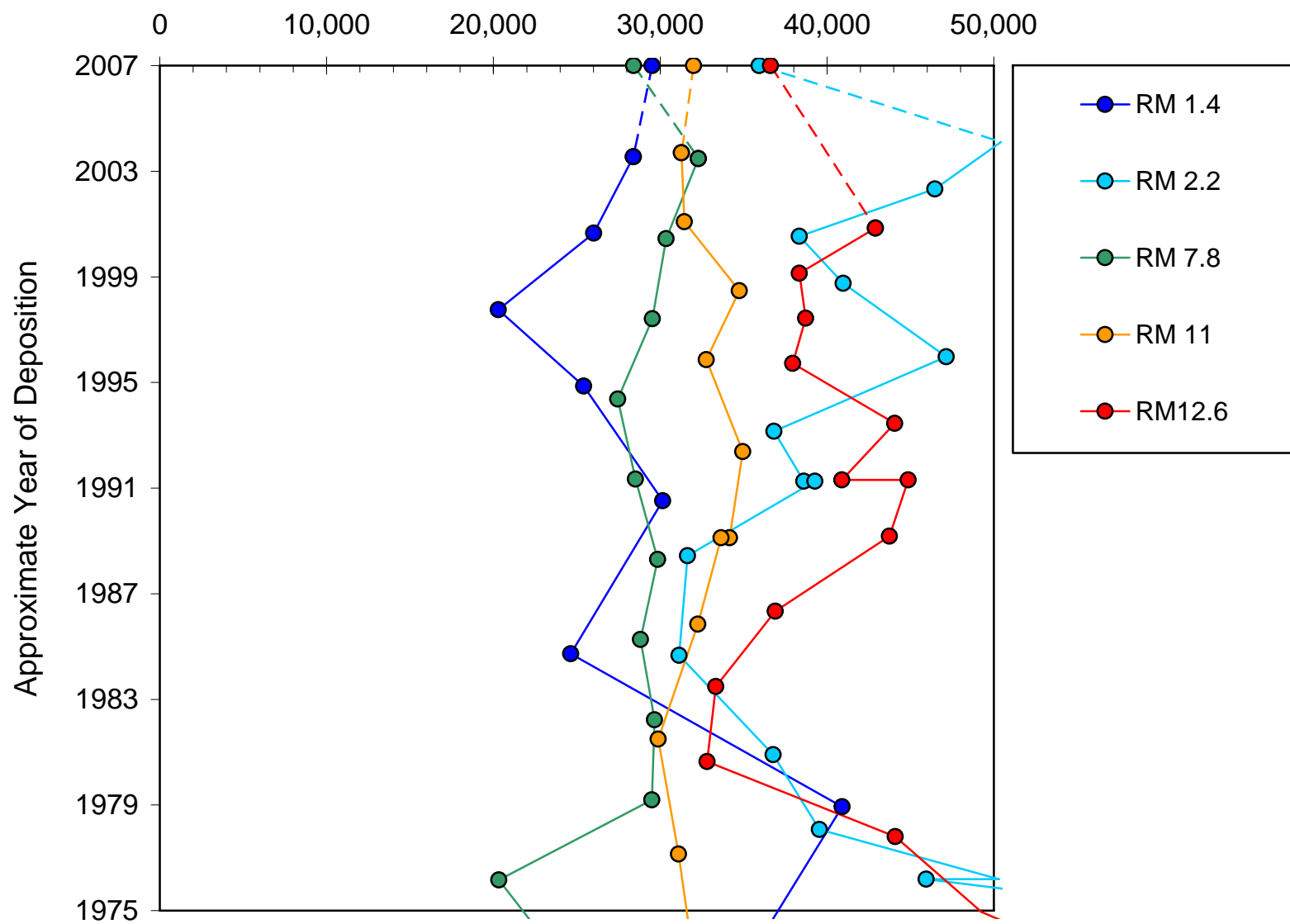
Figure 13-14

September 2008



PAHs Downcore Profiles  
1995 versus 2005 Comparison

Figure 13-15  
September 2008

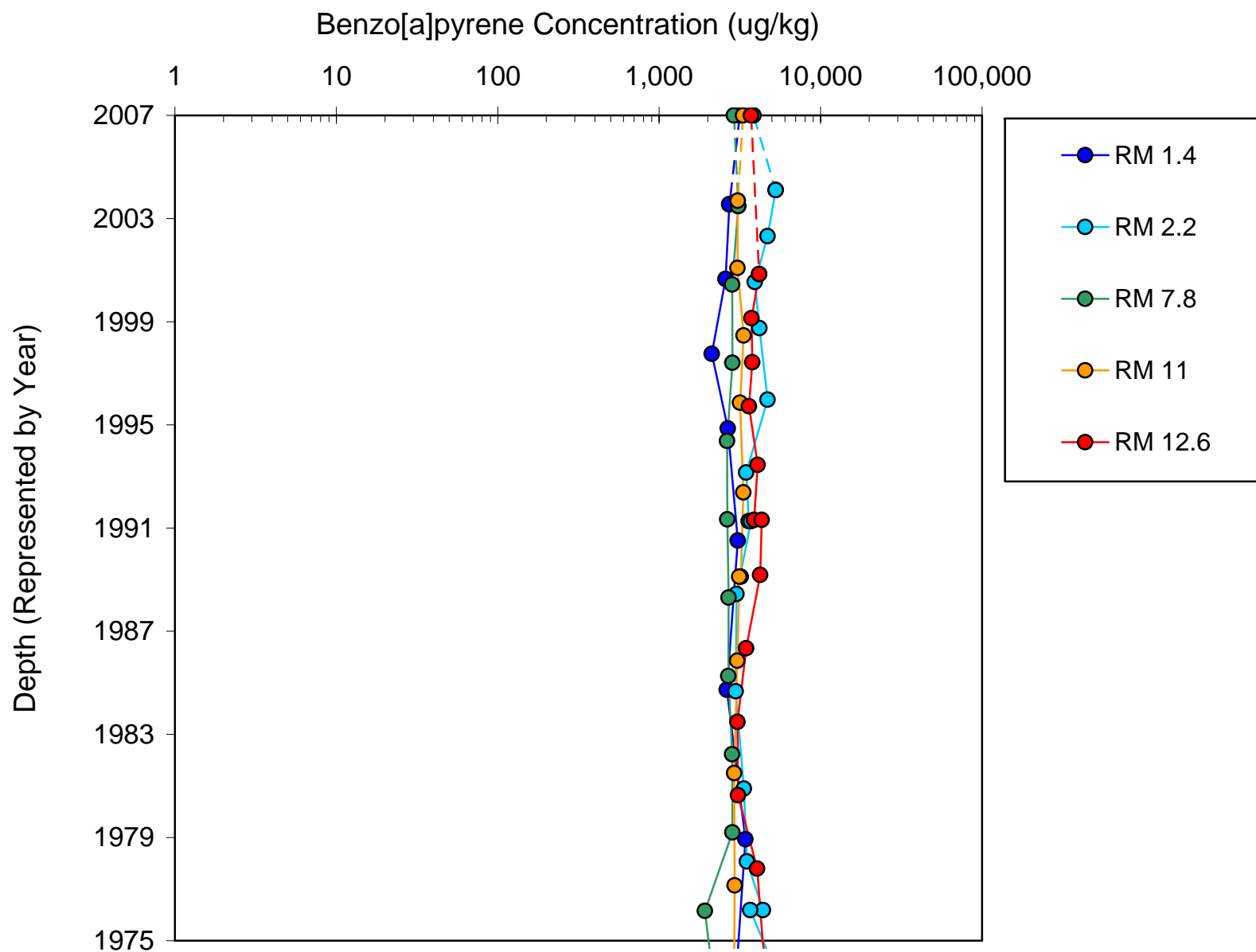


# Higher Molecular Weight PAH Downcore Profile

Lower Passaic River Restoration Project

Figure 13-16

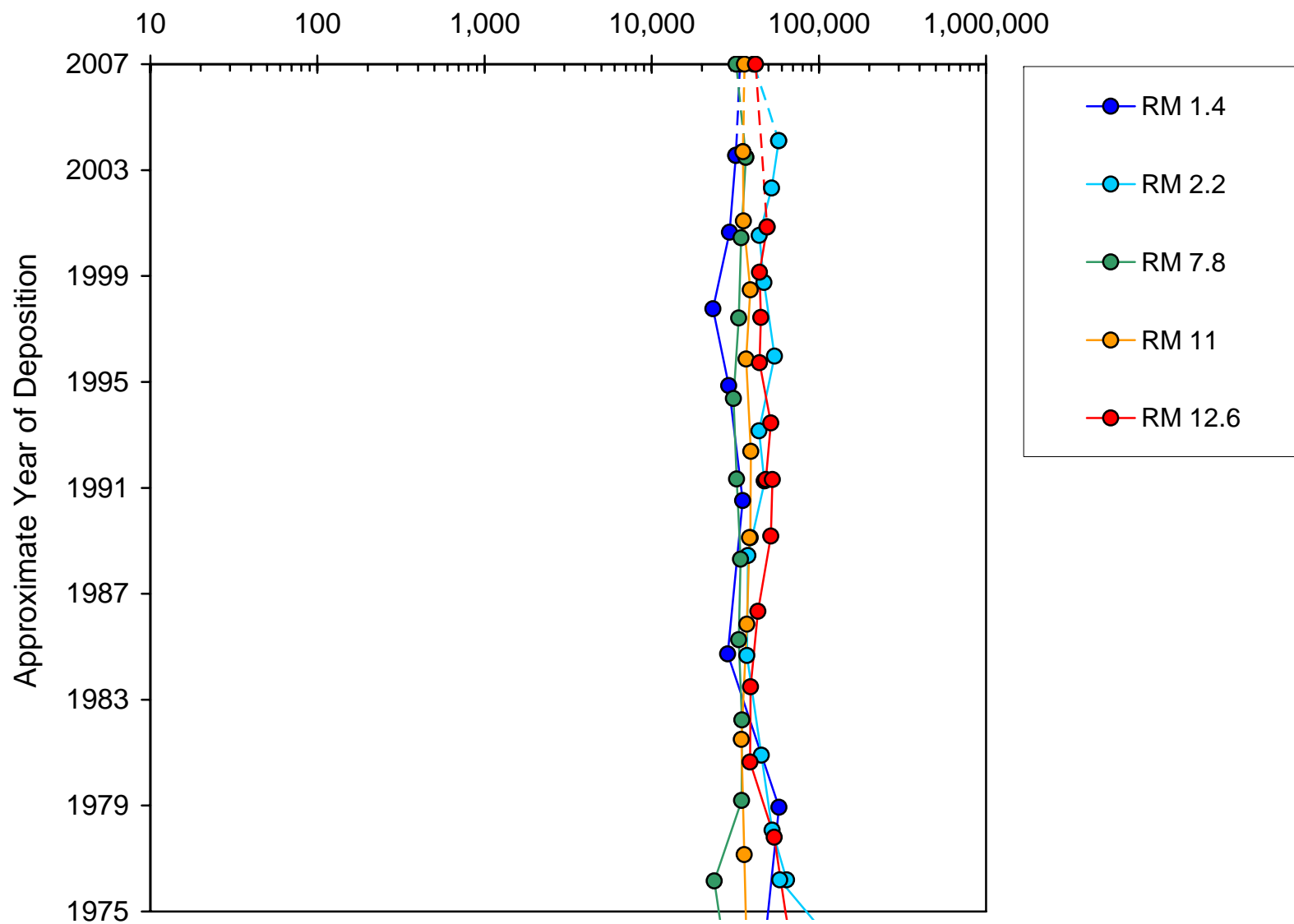
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Benzo[a]pyrene Downcore Profile  
Lower Passaic River Restoration Project

Figure 13-17

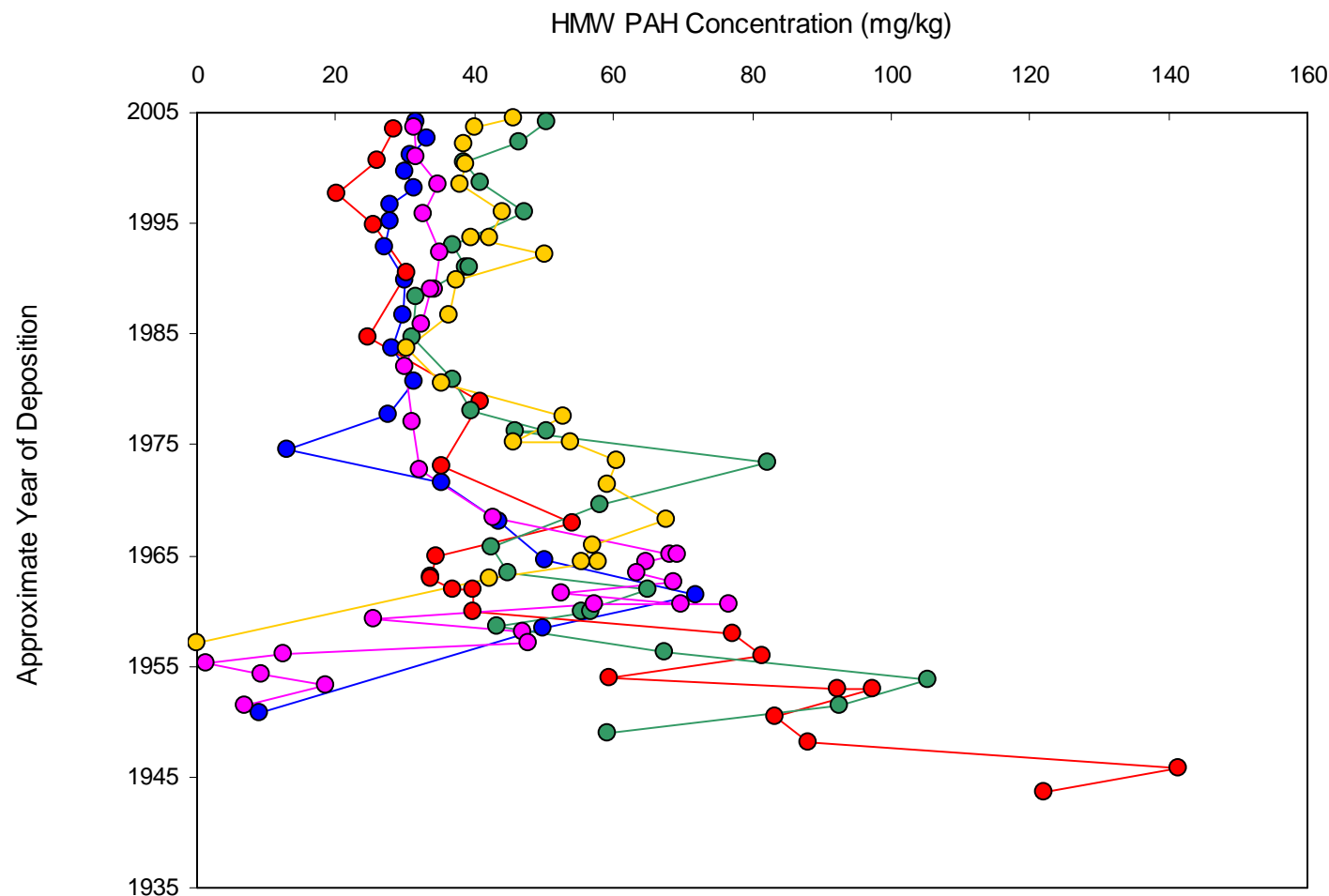
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Total PAH Downcore Profile  
Lower Passaic River Restoration Project

Figure 13-18

September 2008



## Legend

- RM1.4
- RM2.2
- RM7.8
- RM11
- RM12.6

## Notes

HMW = High Molecular Weight

HMW PAH equals the sum of 4-ring, 5-ring, and 6-ring PAH compounds.

Nondetect concentrations plotted as zero.

Data source: USEPA 2005 High Resolution Sediment Coring Program collected by Malcolm Pirnie, Inc.



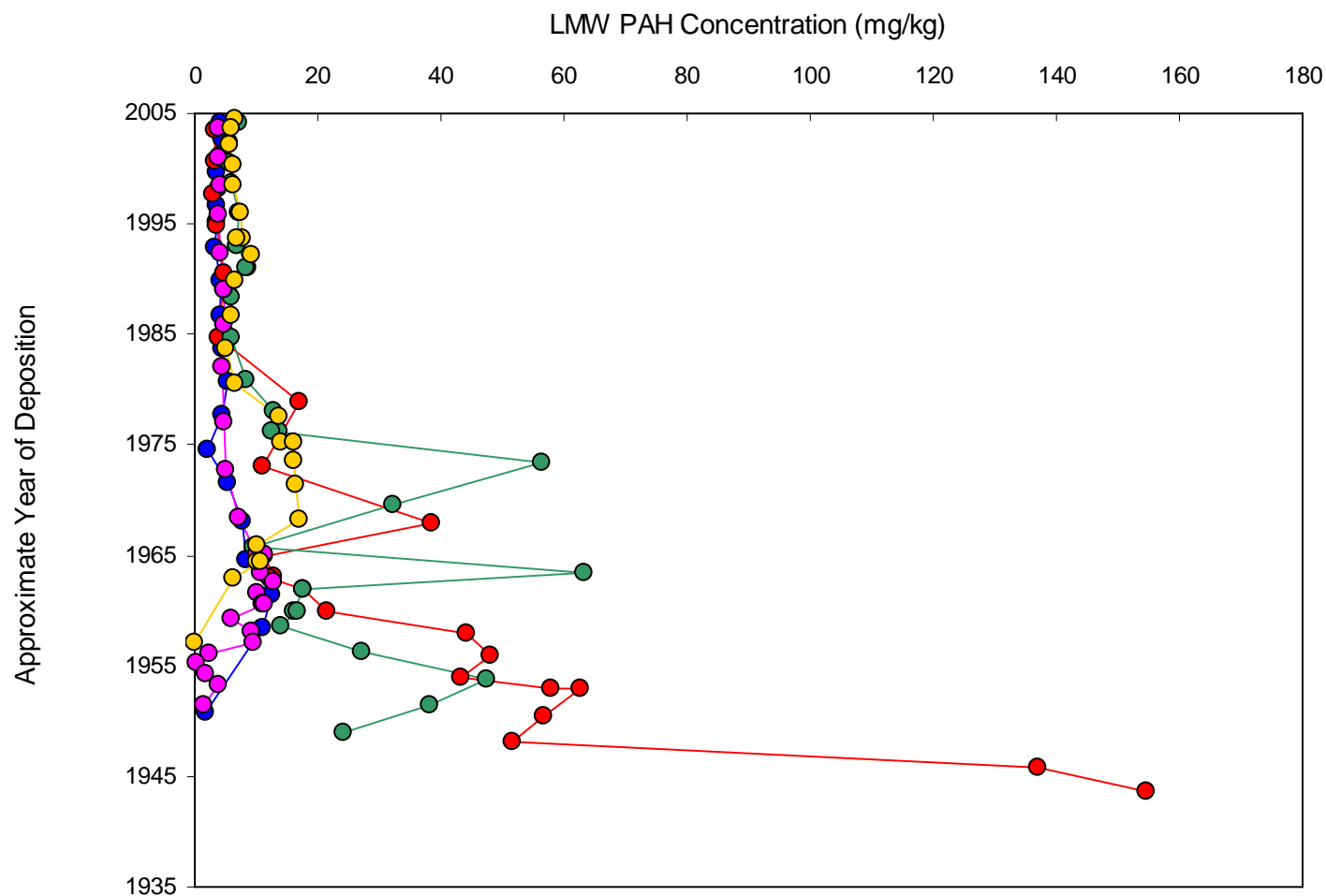
Dated Sediment Core Profile for HMW PAH Concentration of Lower Passaic River High Resolution Sediment Cores

*Lower Passaic River Restoration Project*

Figure 13-19

September 2008





Dated Sediment Core Profile for LMW PAH Concentration of Lower Passaic River High Resolution Sediment Cores

*Lower Passaic River Restoration Project*

Figure 13-20a

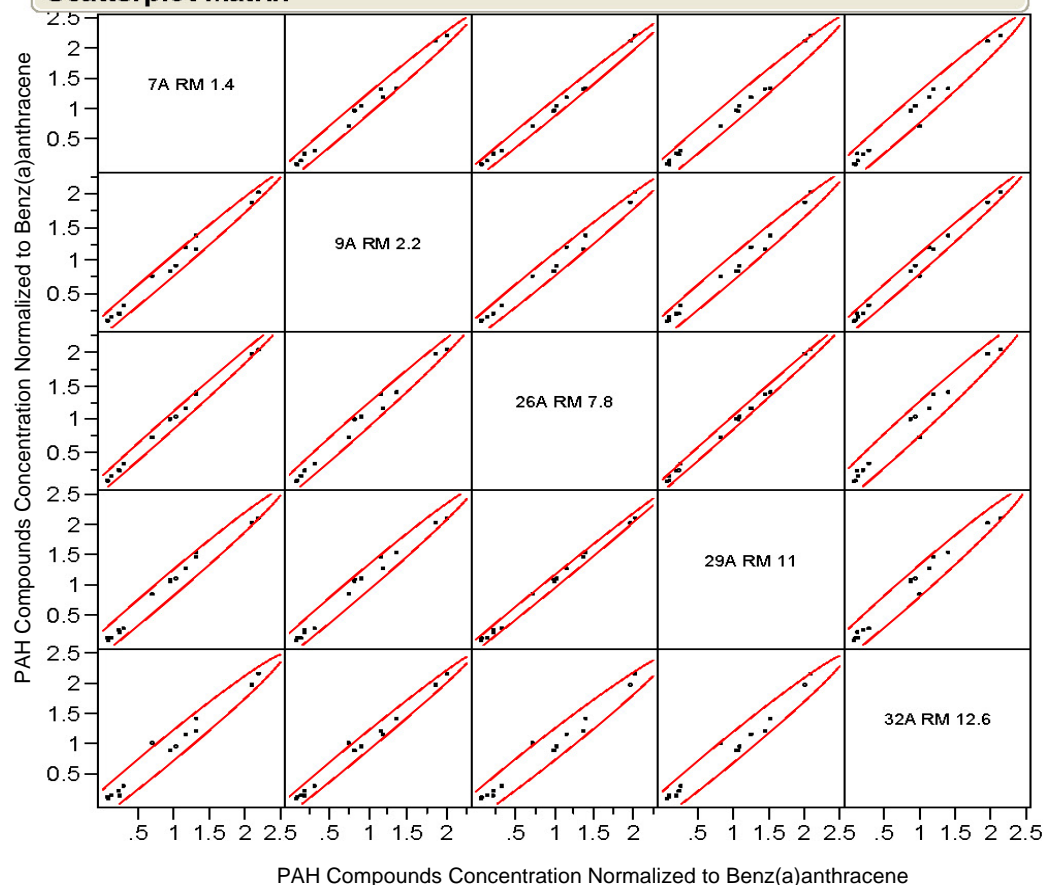
September 2008

# Multivariate Passaic PAHs Normalized to BaA

## Correlations

	7A RM 1.4	9A RM 2.2	26A RM 7.8	29A RM 11	32A RM 12.6
7A RM 1.4	1.0000	0.9945	0.9965	0.9917	0.9879
9A RM 2.2	0.9945	1.0000	0.9936	0.9920	0.9950
26A RM 7.8	0.9965	0.9936	1.0000	0.9979	0.9871
29A RM 11	0.9917	0.9920	0.9979	1.0000	0.9876
32A RM 12.6	0.9879	0.9950	0.9871	0.9876	1.0000

## Scatterplot Matrix



## Legend

- PAH Compounds Concentration Normalized to Benz(a)anthracene

## Notes

Identification numbers 7A, 9A, 26A, 29A, and 32A correspond to river mile location as indicated in the figure.

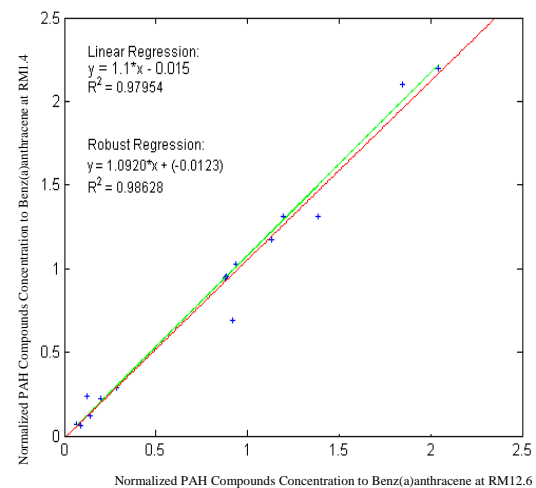
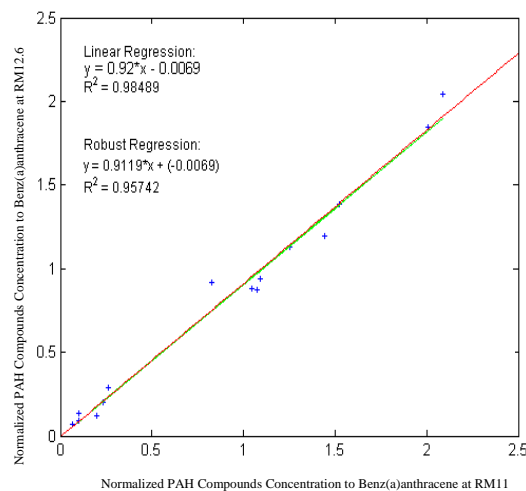
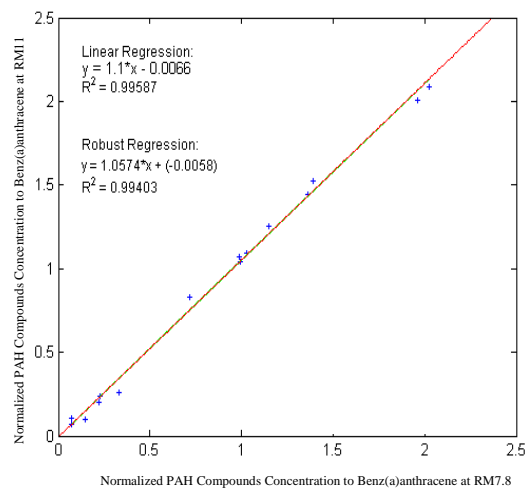
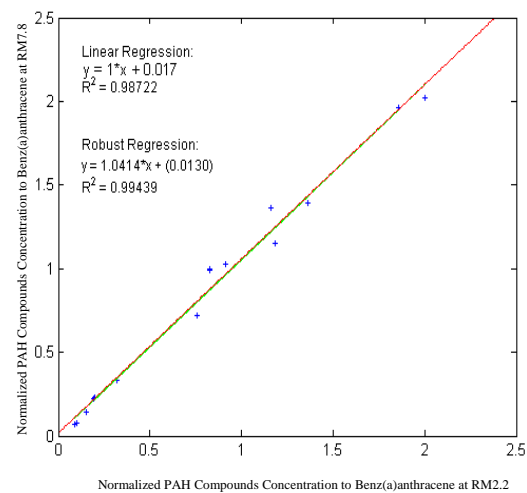
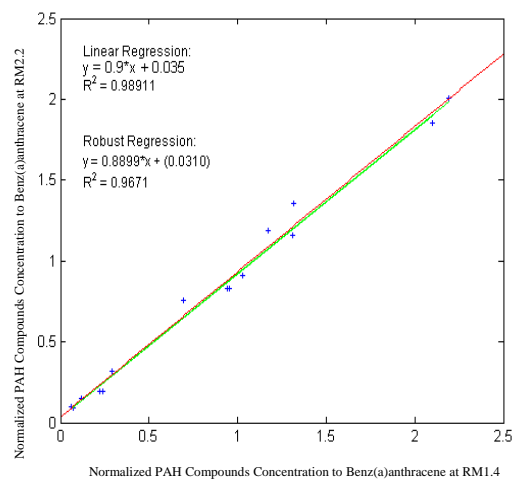
Data Source: USEPA 2005 High Resolution Sediment Coring Program collected by Malcolm Pirnie, Inc.



Correlation Among Sampling Locations for PAH Compounds Normalized to Benz(a)anthracene for the Lower Passaic River High Resolution Cores Surface Sediments  
Lower Passaic River Restoration Project

Figure 13-20b

September 2008



## Legend

- PAH Compounds
- + Concentration Normalized to Benz(a)anthracene
- Linear Regression
- Robust Regression

## Notes

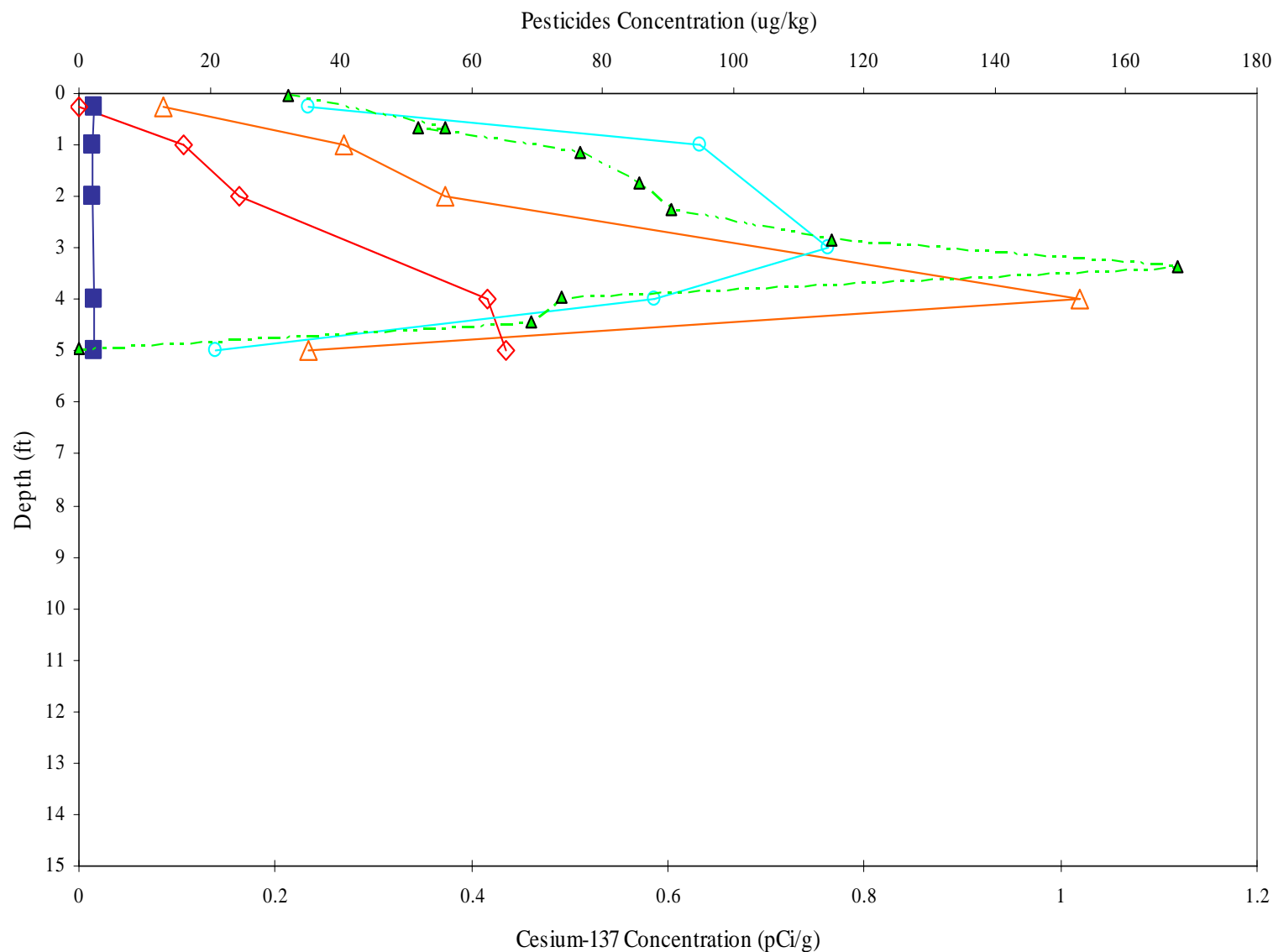


Linear and Robust Regression for PAH Compounds Concentration Normalized to Dieldrin  
 in the Lower Passaic River High Resolution Core Surface Sediments

*Lower Passaic River Restoration Project*

Figure 13-21

September 2008



- Legend**
- Aldrin Detect
  - Aldrin Nondetect
  - Dieldrin Detect
  - Total Endrin
  - Total Chlordane
  - Cesium-137

**Location**

April 1995, River Mile 1.5  
TSI Location 209

- Notes**
- For Aldrin and Dieldrin, non-detected values (lab qualifier containing a U) are plotted as half the reported concentration.
  - Total Chlordane represents the sum of the cis-isomer and trans-isomer. If one of the isomers was not analyzed, then Total Chlordane is not plotted. Non-detected values (lab qualifier containing a U) are included in the summation as zero.
  - Total Endrin represents the sum of endrin ketone, endrin, and endrin aldehyde. If one or more of the analytes were not analyzed, then Total Endrin is not plotted. Non-detected values (lab qualifier containing a U) are included in the summation as zero.



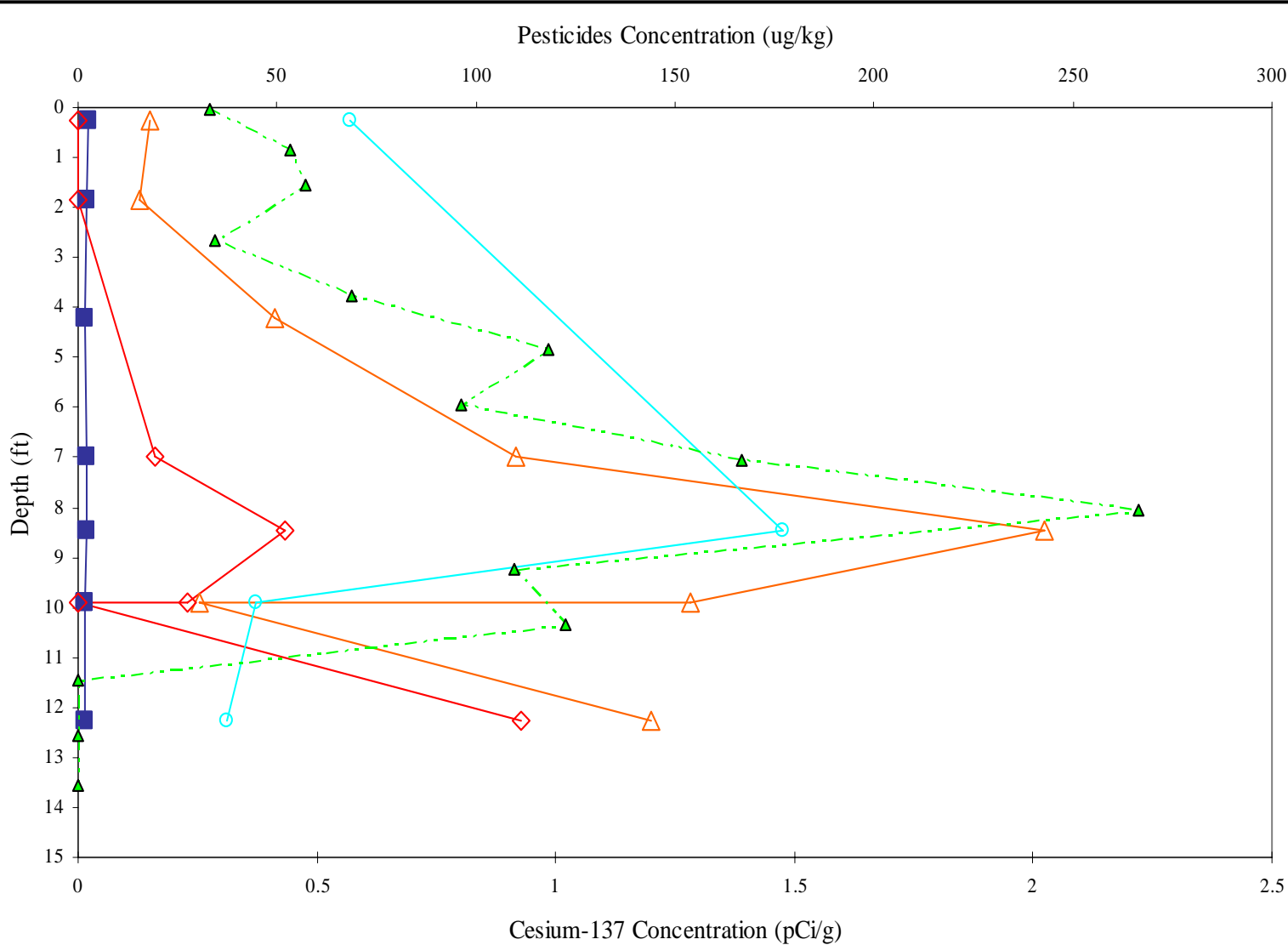
# Downcore Profile for Pesticides (River Mile 1.5)

Lower Passaic River Restoration Project

Figure 13-22a

September 2008





#### Legend

- Aldrin Detect
- Aldrin Nondetect
- △— Dieldrin Detect
- ◇— Total Endrin
- Total Chlordane
- ▲— Cesium-137

#### Location

April 1995, River Mile 2.7  
TSI Location 222

#### Notes

1. For Aldrin and Dieldrin, non-detected values (lab qualifier containing a U) are plotted as half the reported concentration.
2. Total Chlordane represents the sum of the cis-isomer and trans-isomer. If one of the isomers was not analyzed, then Total Chlordane is not plotted. Non-detected values (lab qualifier containing a U) are included in the summation as zero.
3. Total Endrin represents the sum of endrin ketone, endrin, and endrin aldehyde. If one or more of the analytes were not analyzed, then Total Endrin is not plotted. Non-detected values (lab qualifier containing a U) are included in the summation as zero.



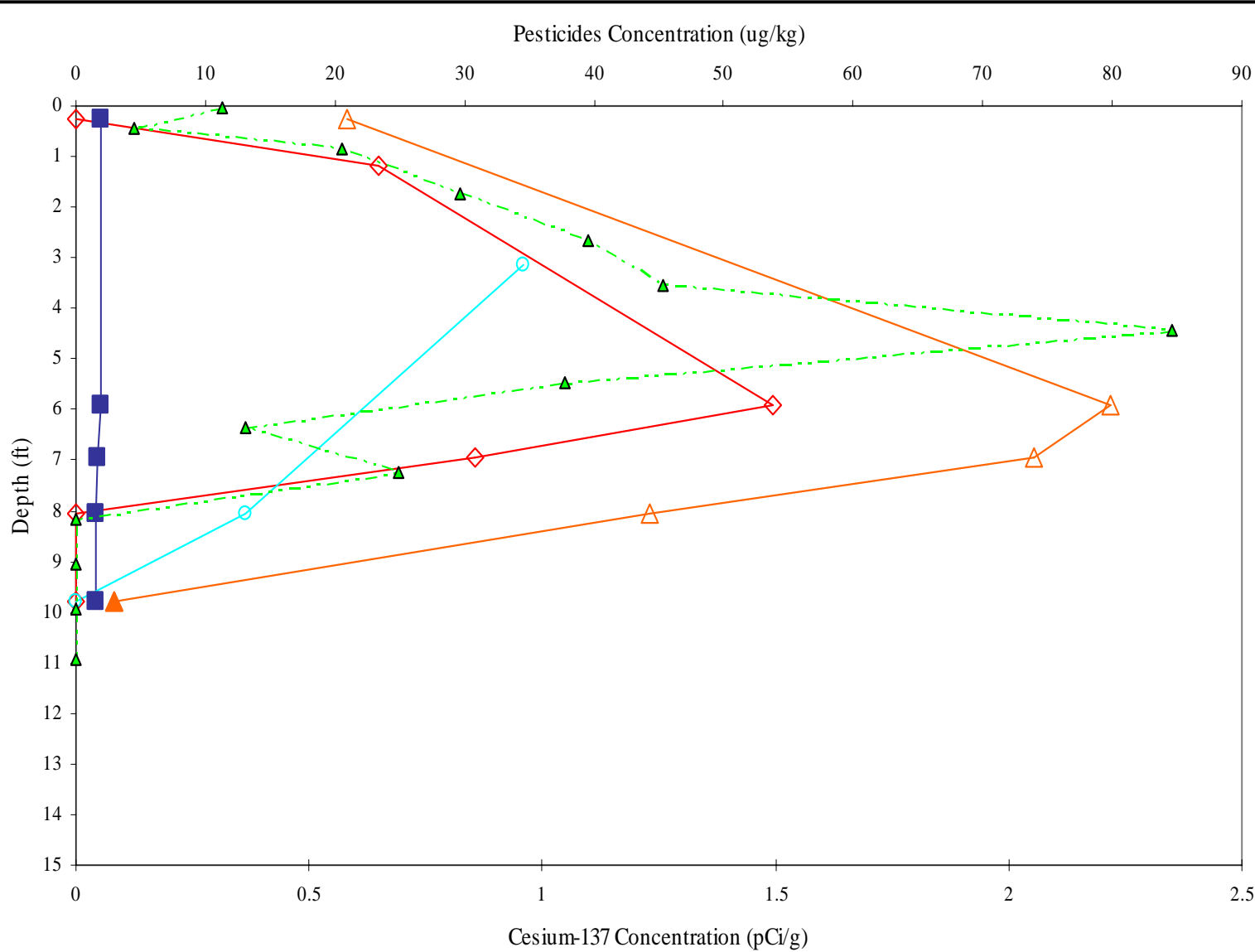
### Downcore Profile for Pesticides (River Mile 2.7)

Lower Passaic River Restoration Project

Figure 13-22b

September 2008





**Legend**

- Aldrin Detect
- Aldrin Nondetect
- Dieldrin Detect
- Dieldrin Nondetect
- Total Endrin
- Total Chlordane
- Cesium-137

**Location**

May 1995, River Mile 3.1  
TSI Location 228

**Notes**

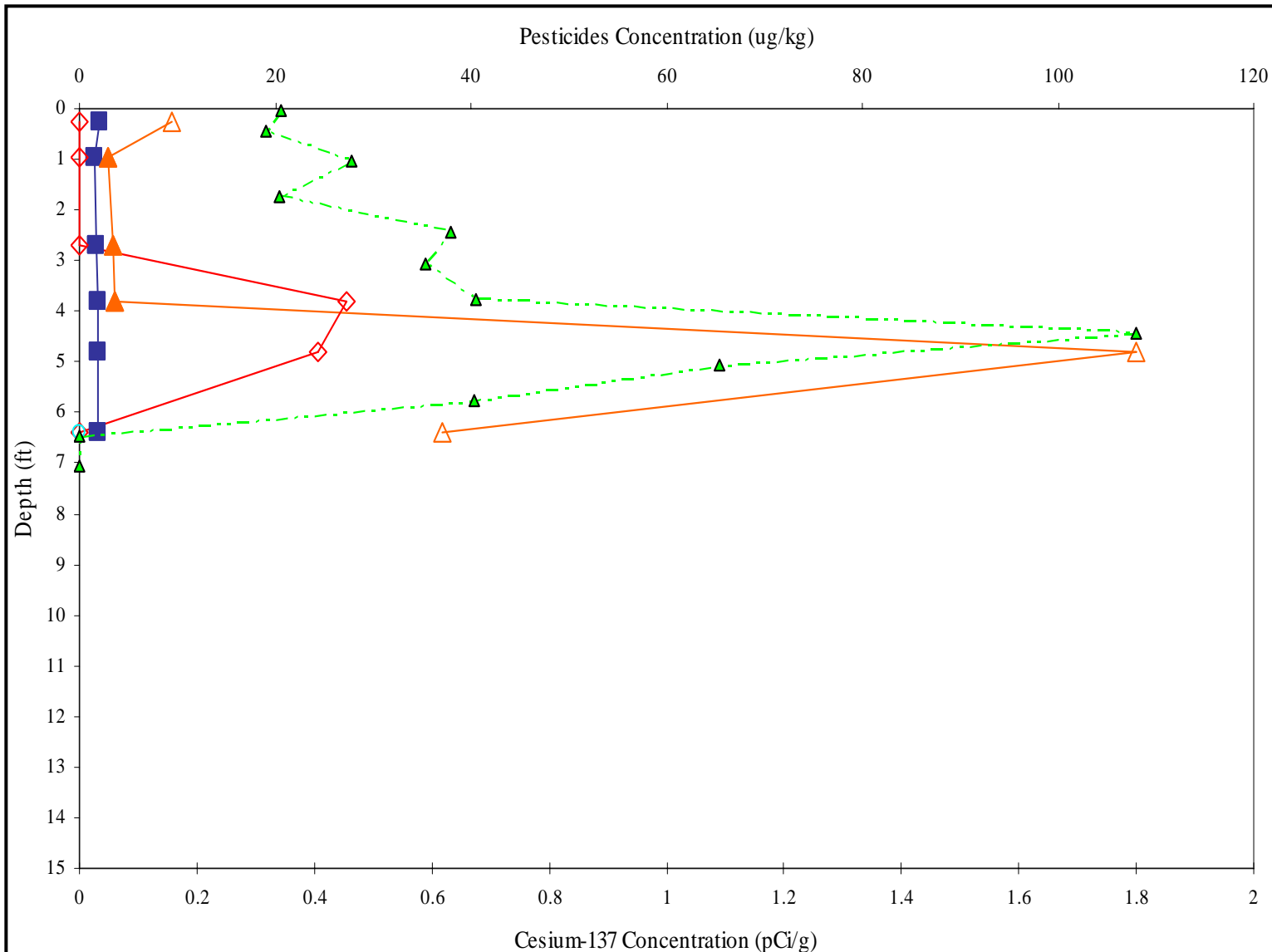
1. For Aldrin and Dieldrin, non-detected values (lab qualifier containing a U) are plotted as half the reported concentration.
2. Total Chlordane represents the sum of the cis-isomer and trans-isomer. If one of the isomers was not analyzed, then Total Chlordane is not plotted. Non-detected values (lab qualifier containing a U) are included in the summation as zero.
3. Total Endrin represents the sum of endrin ketone, endrin, and endrin aldehyde. If one or more of the analytes were not analyzed, then Total Endrin is not plotted. Non-detected values (lab qualifier containing a U) are included in the summation as zero.



Downcore Profile for Pesticides  
(River Mile 3.1)  
Lower Passaic River Restoration Project

Figure 13-22c  
September 2008





#### Legend

- Aldrin Detect
- Aldrin Nondetect
- △— Dieldrin Detect
- ▲ Dieldrin Nondetect
- ◇— Total Endrin
- Total Chlordane
- △— Cesium-137

#### Location

May 1995, River Mile 3.1  
TSI Location 230

#### Notes

1. For Aldrin and Dieldrin, non-detected values (lab qualifier containing a U) are plotted as half the reported concentration.
2. Total Chlordane represents the sum of the cis-isomer and trans-isomer. If one of the isomers was not analyzed, then Total Chlordane is not plotted. Non-detected values (lab qualifier containing a U) are included in the summation as zero.
3. Total Endrin represents the sum of endrin ketone, endrin, and endrin aldehyde. If one or more of the analytes were not analyzed, then Total Endrin is not plotted. Non-detected values (lab qualifier containing a U) are included in the summation as zero.



### Downcore Profile for Pesticides (River Mile 3.1)

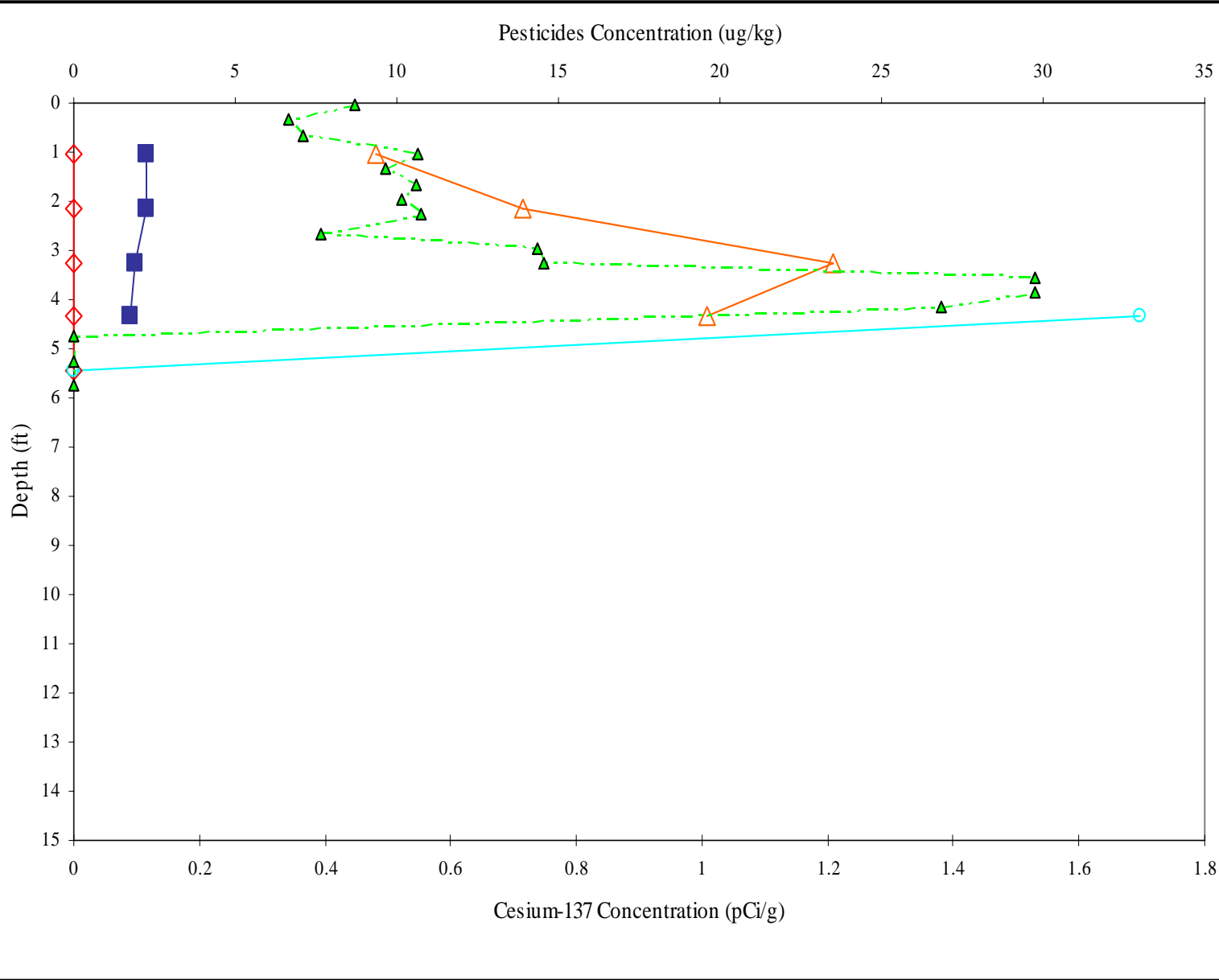
Lower Passaic River Restoration Project

Figure 13-22d

September 2008







#### Legend

- Aldrin Detect
- Aldrin Nondetect
- △— Dieldrin Detect
- ◇— Total Endrin
- Total Chlordane
- △— Cesium-137

#### Location

May 1995, River Mile 3.3  
TSI Location 232

#### Notes

1. For Aldrin and Dieldrin, non-detected values (lab qualifier containing a U) are plotted as half the reported concentration.
2. Total Chlordane represents the sum of the cis-isomer and trans-isomer. If one of the isomers was not analyzed, then Total Chlordane is not plotted. Non-detected values (lab qualifier containing a U) are included in the summation as zero.
3. Total Endrin represents the sum of endrin ketone, endrin, and endrin aldehyde. If one or more of the analytes were not analyzed, then Total Endrin is not plotted. Non-detected values (lab qualifier containing a U) are included in the summation as zero.



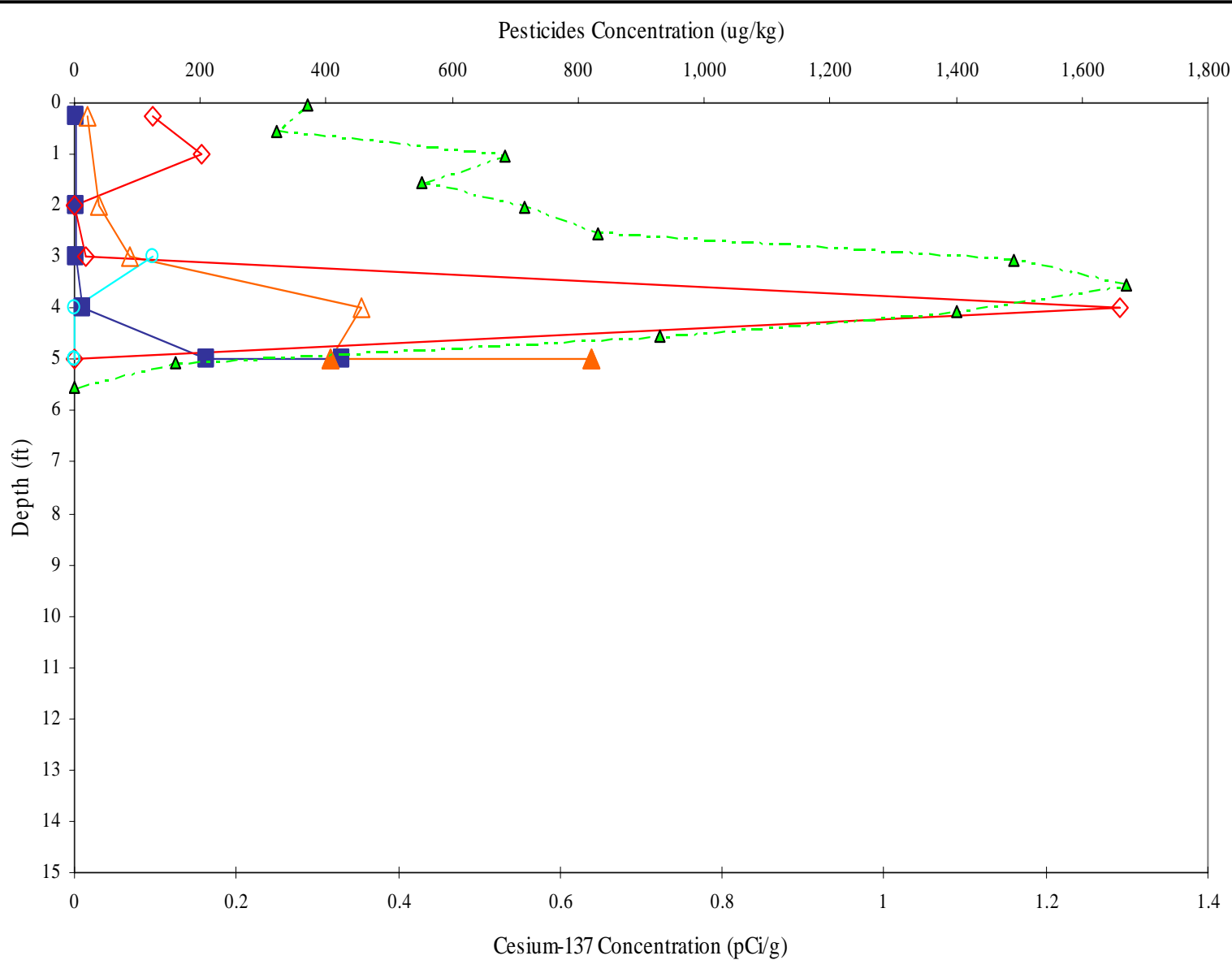
### Downcore Profile for Pesticides (River Mile 3.3)

Lower Passaic River Restoration Project

Figure 13-22e

September 2008





#### Legend

- Aldrin Detect
- Aldrin Nondetect
- △— Dieldrin Detect
- ▲— Dieldrin Nondetect
- ◇— Total Endrin
- Total Chlordane
- ▲— Cesium-137

#### Location

June 1995, River Mile 3.3  
TSI Location 286

#### Notes

1. For Aldrin and Dieldrin, non-detected values (lab qualifier containing a U) are plotted as half the reported concentration.
2. Total Chlordane represents the sum of the cis-isomer and trans-isomer. If one of the isomers was not analyzed, then Total Chlordane is not plotted. Non-detected values (lab qualifier containing a U) are included in the summation as zero.
3. Total Endrin represents the sum of endrin ketone, endrin, and endrin aldehyde. If one or more of the analytes were not analyzed, then Total Endrin is not plotted. Non-detected values (lab qualifier containing a U) are included in the summation as zero.



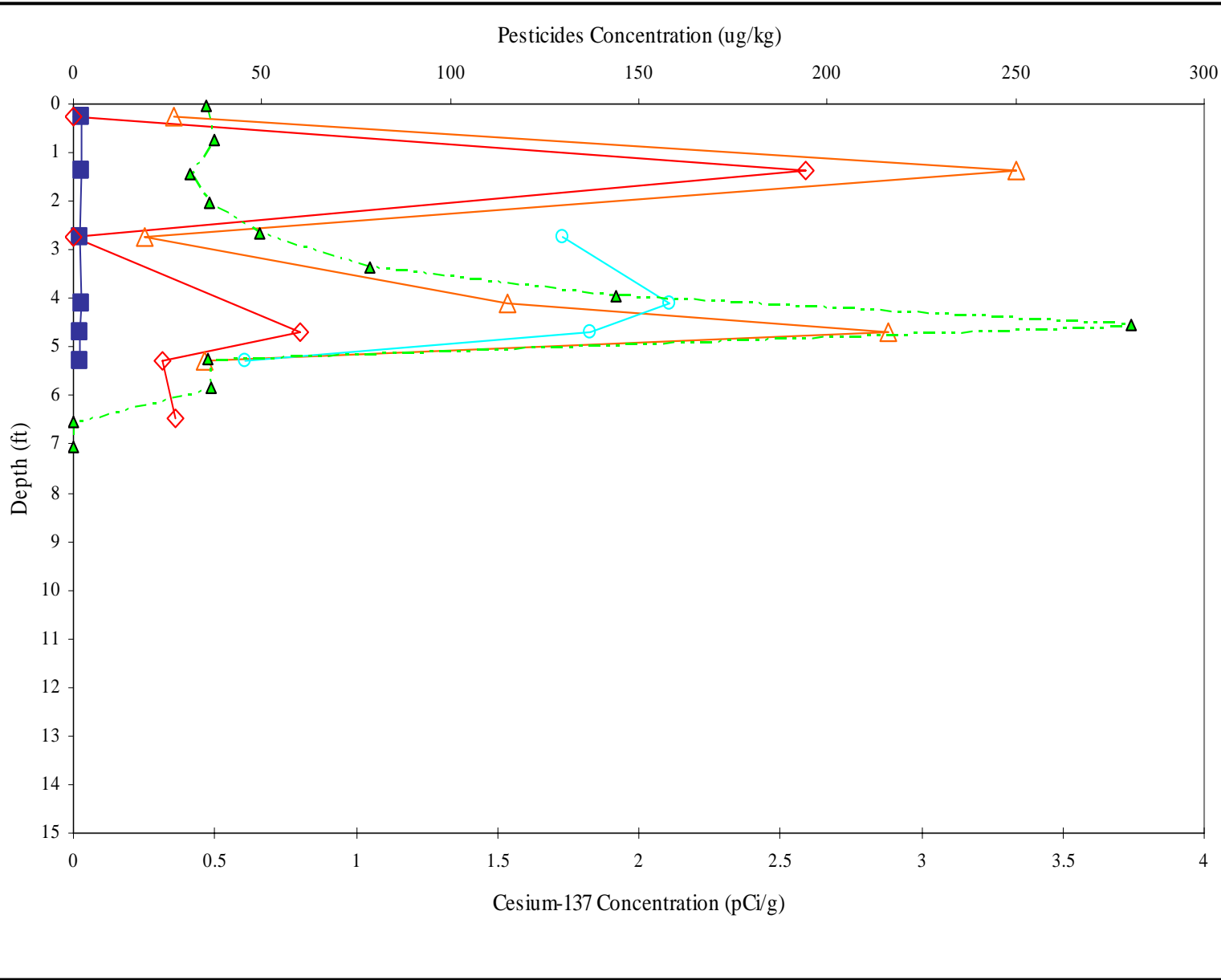
### Downcore Profile for Pesticides (River Mile 3.3)

Lower Passaic River Restoration Project

Figure 13-22f

September 2008





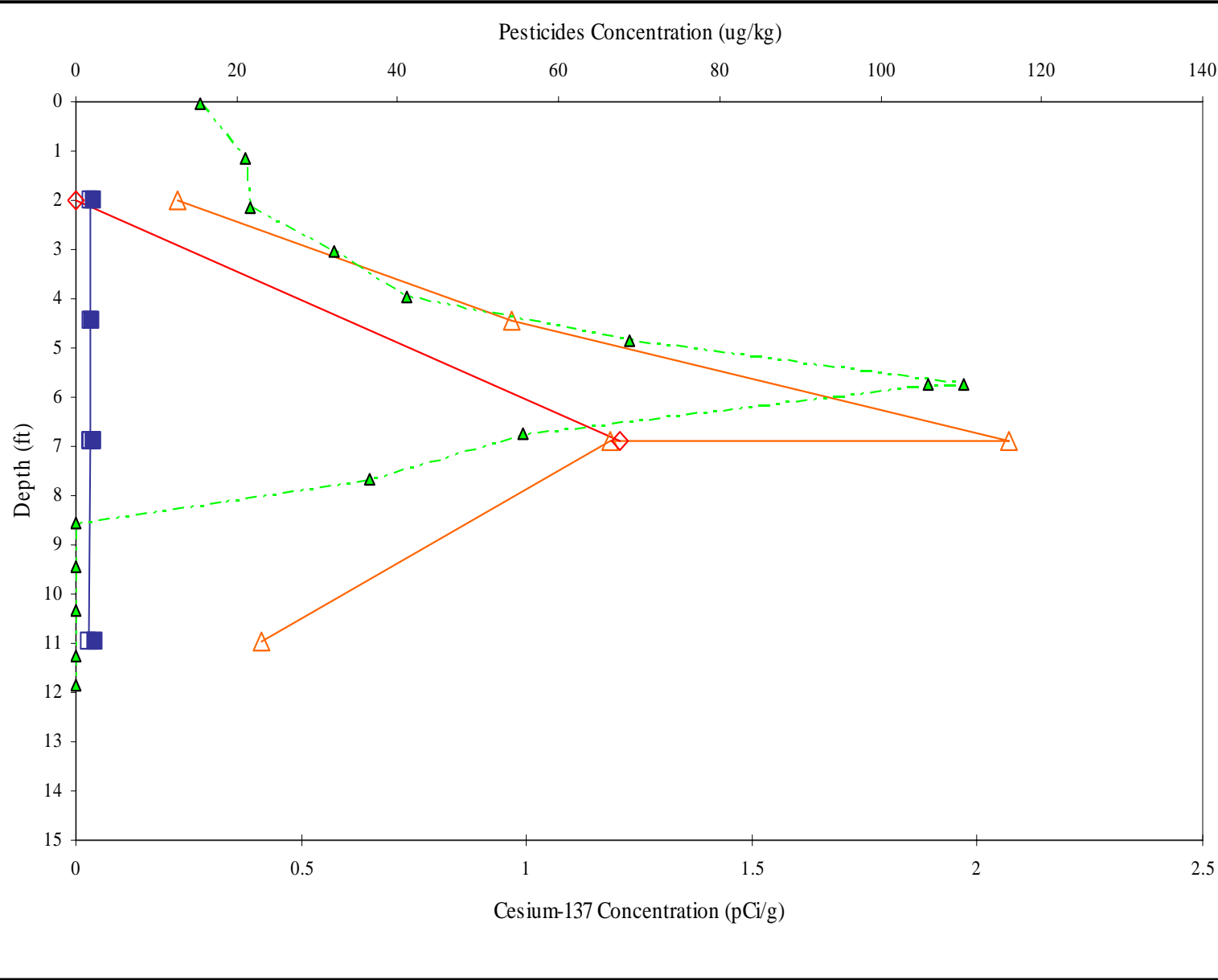
**Legend**

- Aldrin Detect
- Aldrin Nondetect
- Dieldrin Detect
- Total Endrin
- Total Chlordane
- Cesium-137

**Location**

May 1995, River Mile 3.6  
TSI Location 235

- Notes**
1. For Aldrin and Dieldrin, non-detected values (lab qualifier containing a U) are plotted as half the reported concentration.
  2. Total Chlordane represents the sum of the cis-isomer and trans-isomer. If one of the isomers was not analyzed, then Total Chlordane is not plotted. Non-detected values (lab qualifier containing a U) are included in the summation as zero.
  3. Total Endrin represents the sum of endrin ketone, endrin, and endrin aldehyde. If one or more of the analytes were not analyzed, then Total Endrin is not plotted. Non-detected values (lab qualifier containing a U) are included in the summation as zero.



#### Legend

- Aldrin Detect
- Aldrin Nondetect
- Dieldrin Detect
- Total Endrin
- Total Chlordane
- Cesium-137

#### Location

May 1995, River Mile 4.0  
TSI Location 241

#### Notes

- For Aldrin and Dieldrin, non-detected values (lab qualifier containing a U) are plotted as half the reported concentration.
- Total Chlordane represents the sum of the cis-isomer and trans-isomer. If one of the isomers was not analyzed, then Total Chlordane is not plotted. Non-detected values (lab qualifier containing a U) are included in the summation as zero.
- Total Endrin represents the sum of endrin ketone, endrin, and endrin aldehyde. If one or more of the analytes were not analyzed, then Total Endrin is not plotted. Non-detected values (lab qualifier containing a U) are included in the summation as zero.



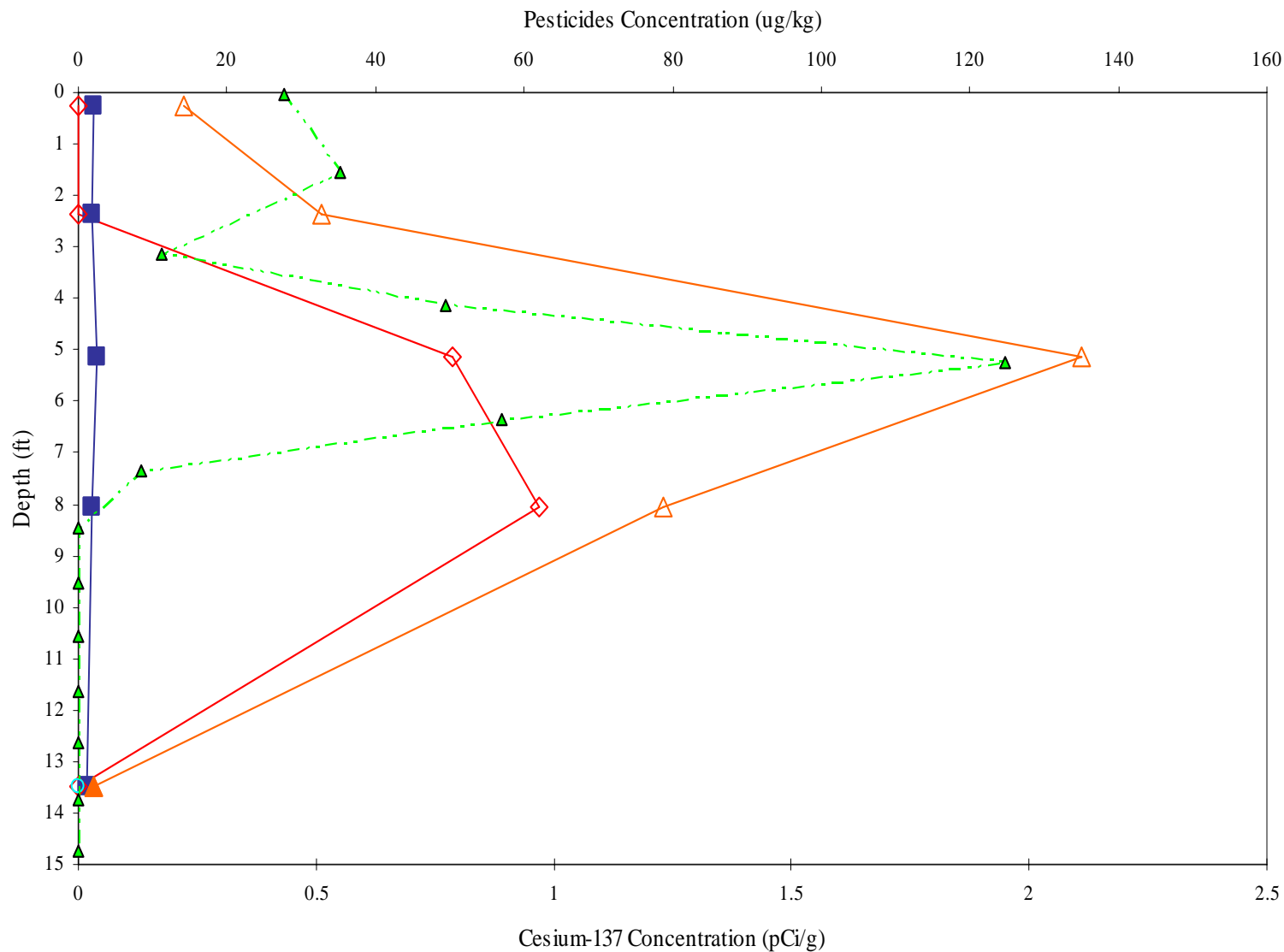
### Downcore Profile for Pesticides (River Mile 4.0)

Lower Passaic River Restoration Project

Figure 13-22h

September 2008





#### Legend

- Aldrin Detect
- Aldrin Nondetect
- △— Dieldrin Detect
- ▲— Dieldrin Nondetect
- ◇— Total Endrin
- Total Chlordane
- ▲— Cesium-137

#### Location

May 1995, River Mile 4.5  
TSI Location 248

#### Notes

1. For Aldrin and Dieldrin, non-detected values (lab qualifier containing a U) are plotted as half the reported concentration.
2. Total Chlordane represents the sum of the cis-isomer and trans-isomer. If one of the isomers was not analyzed, then Total Chlordane is not plotted. Non-detected values (lab qualifier containing a U) are included in the summation as zero.
3. Total Endrin represents the sum of endrin ketone, endrin, and endrin aldehyde. If one or more of the analytes were not analyzed, then Total Endrin is not plotted. Non-detected values (lab qualifier containing a U) are included in the summation as zero.



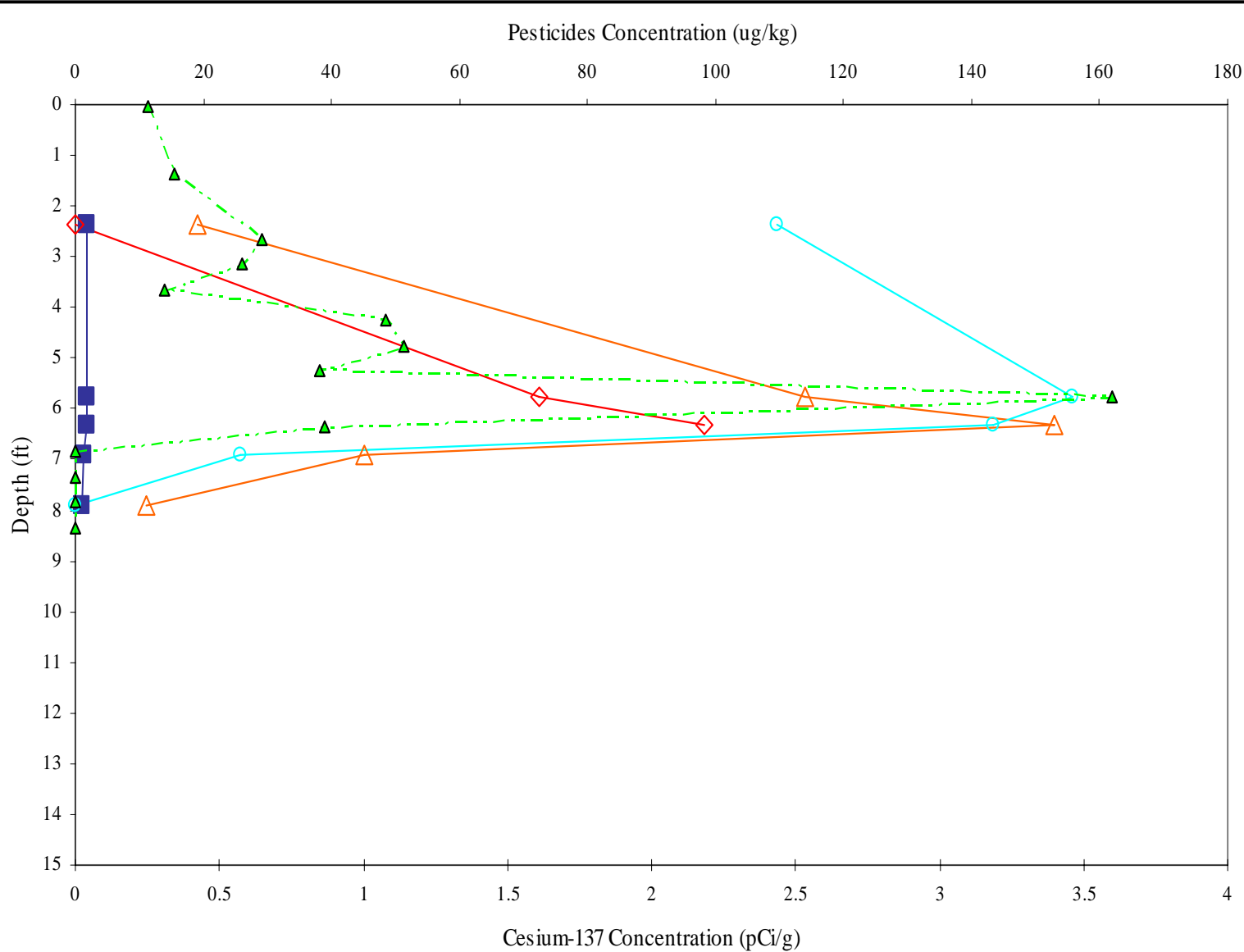
### Downcore Profile for Pesticides (River Mile 4.5)

Lower Passaic River Restoration Project

Figure 13-22i

September 2008





#### Legend

- Aldrin Detect
- Aldrin Nondetect
- △— Dieldrin Detect
- ◇— Total Endrin
- Total Chlordane
- △— Cesium-137

#### Location

May 1995, River Mile 4.7  
TSI Location 251

#### Notes

1. For Aldrin and Dieldrin, non-detected values (lab qualifier containing a U) are plotted as half the reported concentration.
2. Total Chlordane represents the sum of the cis-isomer and trans-isomer. If one of the isomers was not analyzed, then Total Chlordane is not plotted. Non-detected values (lab qualifier containing a U) are included in the summation as zero.
3. Total Endrin represents the sum of endrin ketone, endrin, and endrin aldehyde. If one or more of the analytes were not analyzed, then Total Endrin is not plotted. Non-detected values (lab qualifier containing a U) are included in the summation as zero.



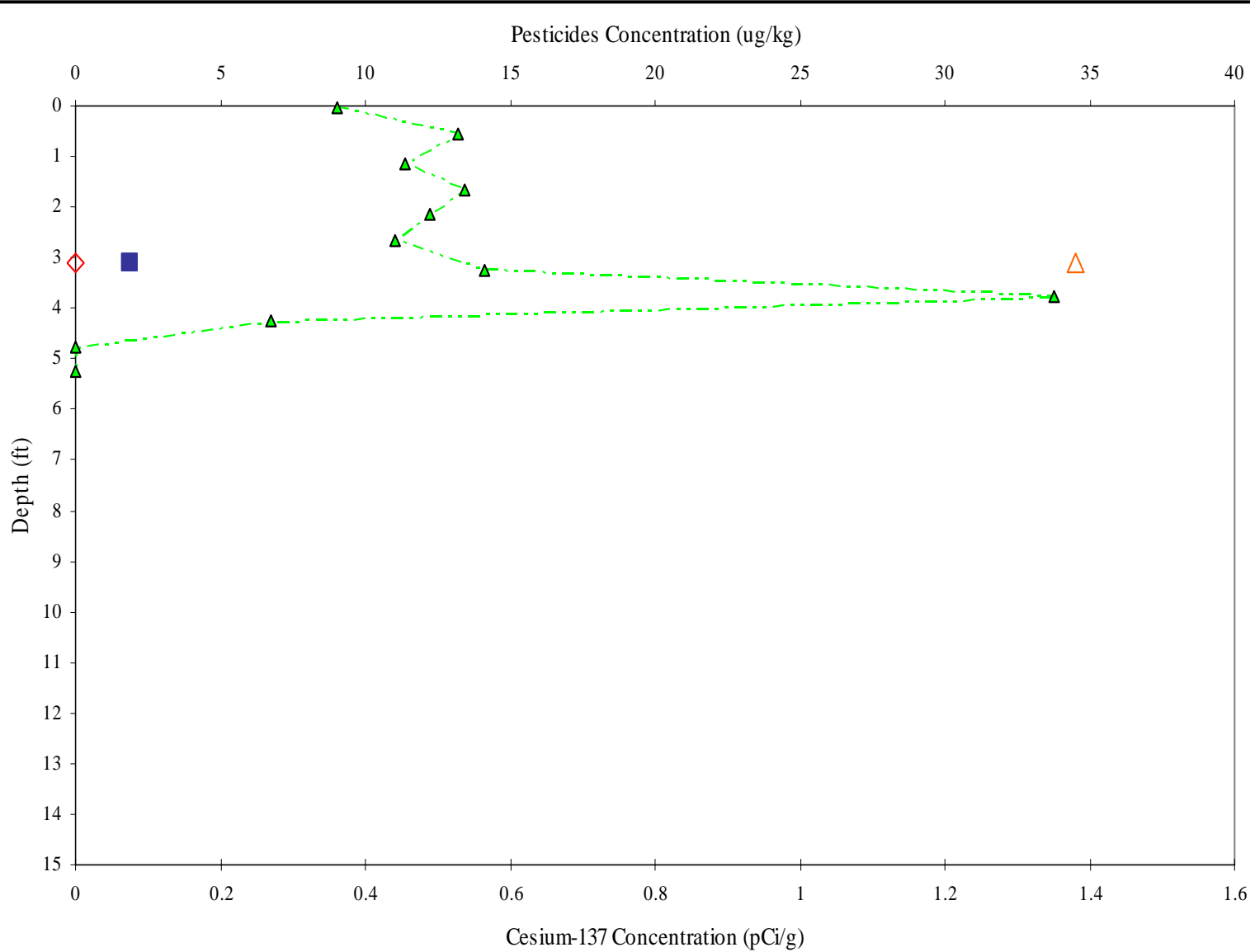
### Downcore Profile for Pesticides (River Mile 4.7)

Lower Passaic River Restoration Project

Figure 13-22j

September 2008





**Legend**

- Aldrin Detect
- Aldrin Nondetect
- Dieldrin Detect
- Total Endrin
- Total Chlordane
- Cesium-137

**Location**

May 1995, River Mile 4.9  
TSI Location 253

- Notes**
1. For Aldrin and Dieldrin, non-detected values (lab qualifier containing a U) are plotted as half the reported concentration.
  2. Total Chlordane represents the sum of the cis-isomer and trans-isomer. If one of the isomers was not analyzed, then Total Chlordane is not plotted. Non-detected values (lab qualifier containing a U) are included in the summation as zero.
  3. Total Endrin represents the sum of endrin ketone, endrin, and endrin aldehyde. If one or more of the analytes were not analyzed, then Total Endrin is not plotted. Non-detected values (lab qualifier containing a U) are included in the summation as zero.

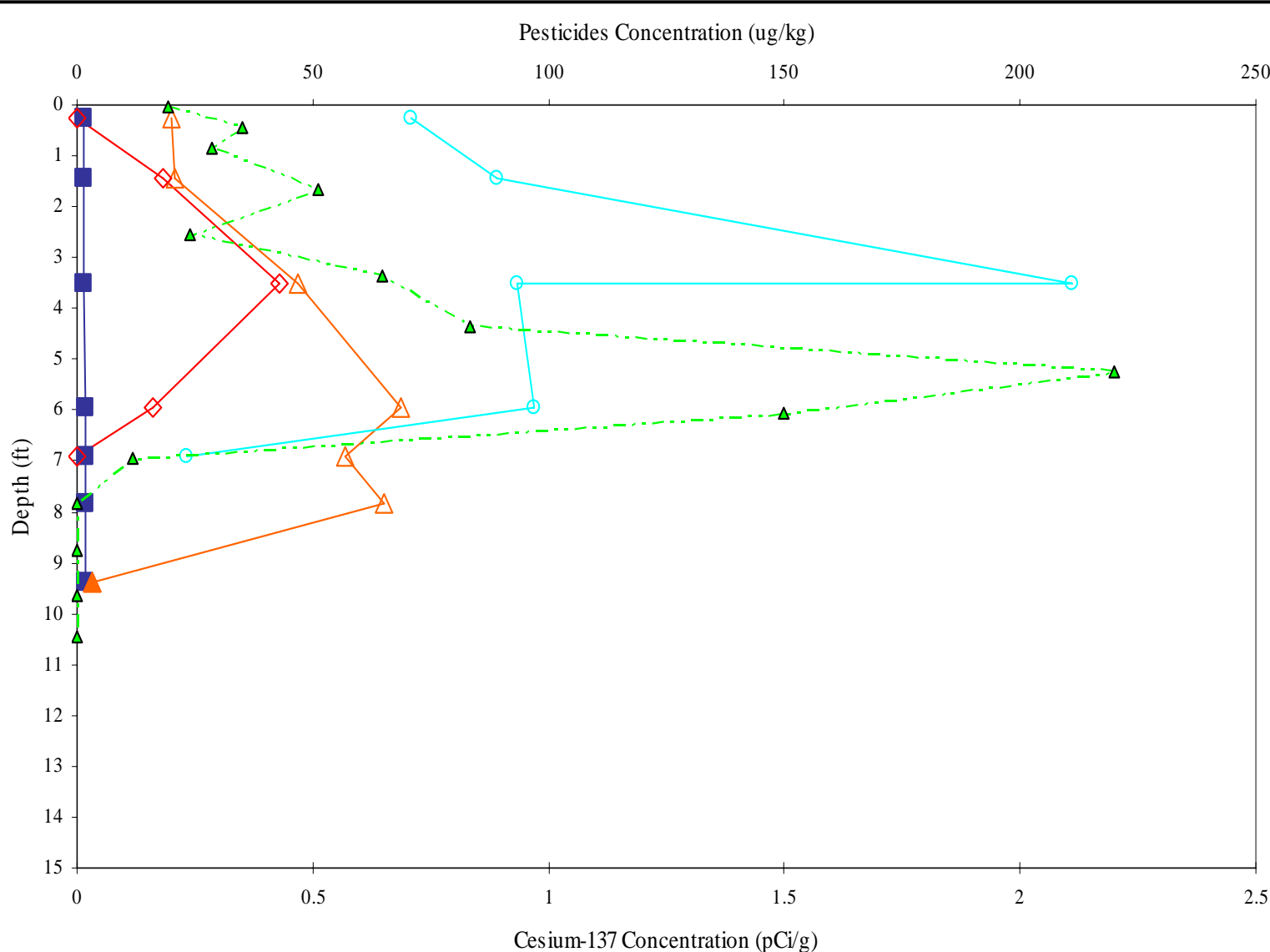


Downcore Profile for Pesticides  
(River Mile 4.9)  
Lower Passaic River Restoration Project

Figure 13-22k  
September 2008







**Legend**

- Aldrin Detect
- Aldrin Nondetect
- Dieldrin Detect
- Dieldrin Nondetect
- Total Endrin
- Total Chlordane
- Cesium-137

**Location**

May 1995, River Mile 6.3  
TSI Location 272

**Notes**

- For Aldrin and Dieldrin, non-detected values (lab qualifier containing a U) are plotted as half the reported concentration.
- Total Chlordane represents the sum of the cis-isomer and trans-isomer. If one of the isomers was not analyzed, then Total Chlordane is not plotted. Non-detected values (lab qualifier containing a U) are included in the summation as zero.
- Total Endrin represents the sum of endrin ketone, endrin, and endrin aldehyde. If one or more of the analytes were not analyzed, then Total Endrin is not plotted. Non-detected values (lab qualifier containing a U) are included in the summation as zero.

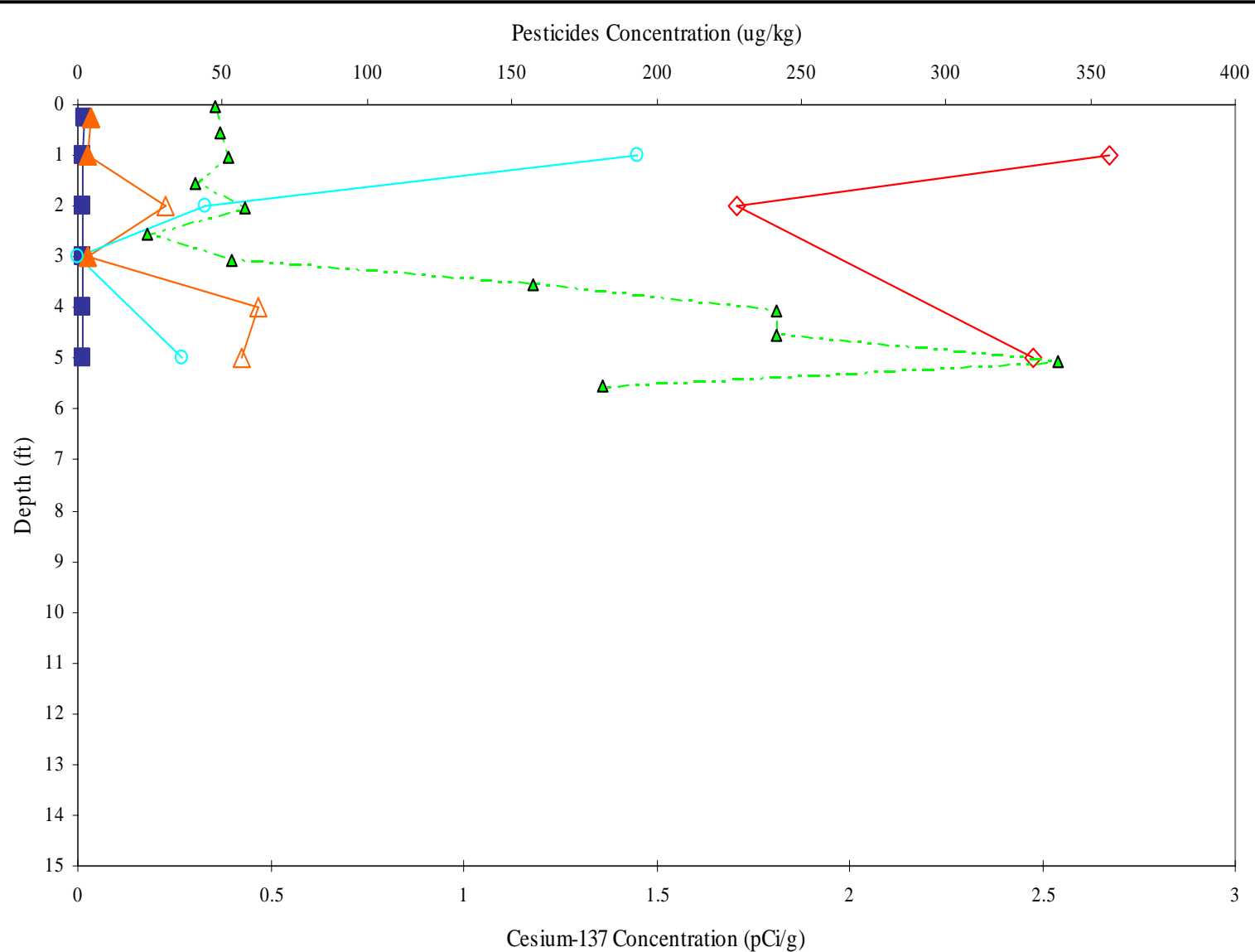


Downcore Profile for Pesticides  
(River Mile 6.3)  
Lower Passaic River Restoration Project

Figure 13-22I

September 2008





**Legend**

- Aldrin Detect
- Aldrin Nondetect
- Dieldrin Detect
- Dieldrin Nondetect
- Total Endrin
- Total Chlordane
- Cesium-137

**Location**

June 1995, River Mile 6.4  
TSI Location 296

**Notes**

1. For Aldrin and Dieldrin, non-detected values (lab qualifier containing a U) are plotted as half the reported concentration.
2. Total Chlordane represents the sum of the cis-isomer and trans-isomer. If one of the isomers was not analyzed, then Total Chlordane is not plotted. Non-detected values (lab qualifier containing a U) are included in the summation as zero.
3. Total Endrin represents the sum of endrin ketone, endrin, and endrin aldehyde. If one or more of the analytes were not analyzed, then Total Endrin is not plotted. Non-detected values (lab qualifier containing a U) are included in the summation as zero.



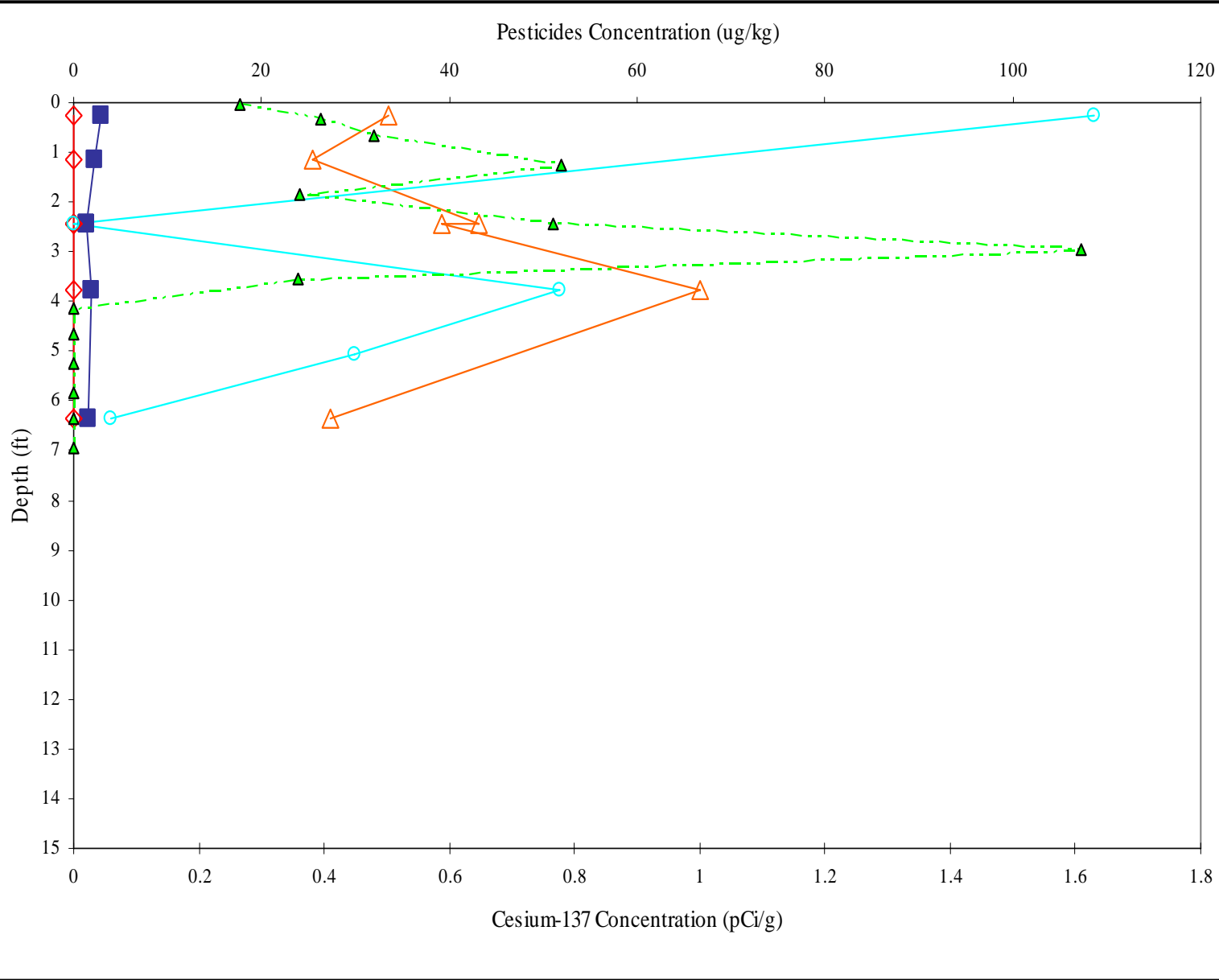
**Downcore Profile for Pesticides  
(River Mile 6.4)**

*Lower Passaic River Restoration Project*

**Figure 13-22m**

September 2008





**Legend**

- Aldrin Detect
- Aldrin Nondetect
- Dieldrin Detect
- Total Endrin
- Total Chlordane
- Cesium-137

**Location**

June 1995, River Mile 6.5  
TSI Location 275

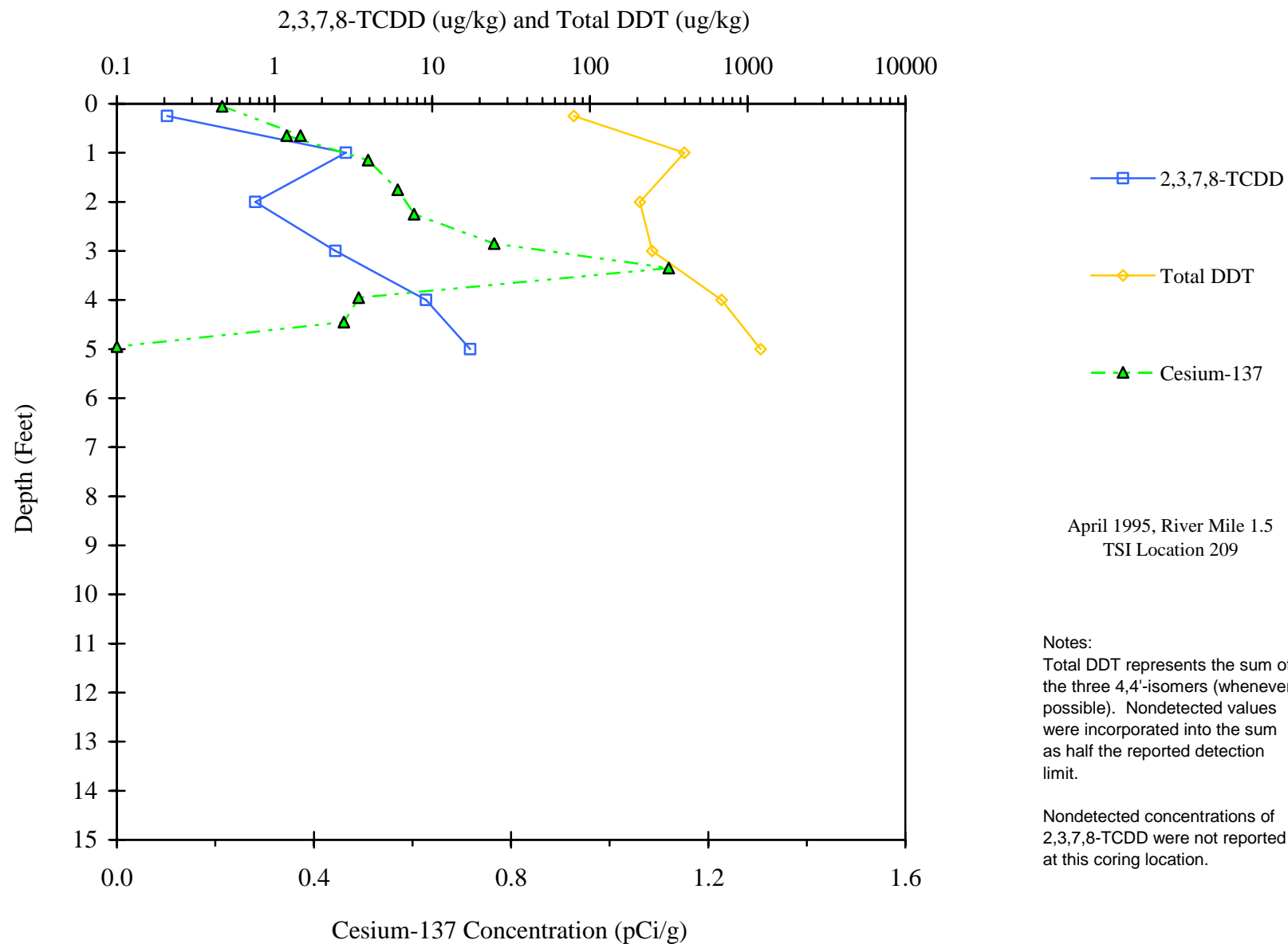
- Notes**
1. For Aldrin and Dieldrin, non-detected values (lab qualifier containing a U) are plotted as half the reported concentration.
  2. Total Chlordane represents the sum of the cis-isomer and trans-isomer. If one of the isomers was not analyzed, then Total Chlordane is not plotted. Non-detected values (lab qualifier containing a U) are included in the summation as zero.
  3. Total Endrin represents the sum of endrin ketone, endrin, and endrin aldehyde. If one or more of the analytes were not analyzed, then Total Endrin is not plotted. Non-detected values (lab qualifier containing a U) are included in the summation as zero.



Downcore Profile for Pesticides  
(River Mile 6.5)  
Lower Passaic River Restoration Project

Figure 13-22n  
September 2008



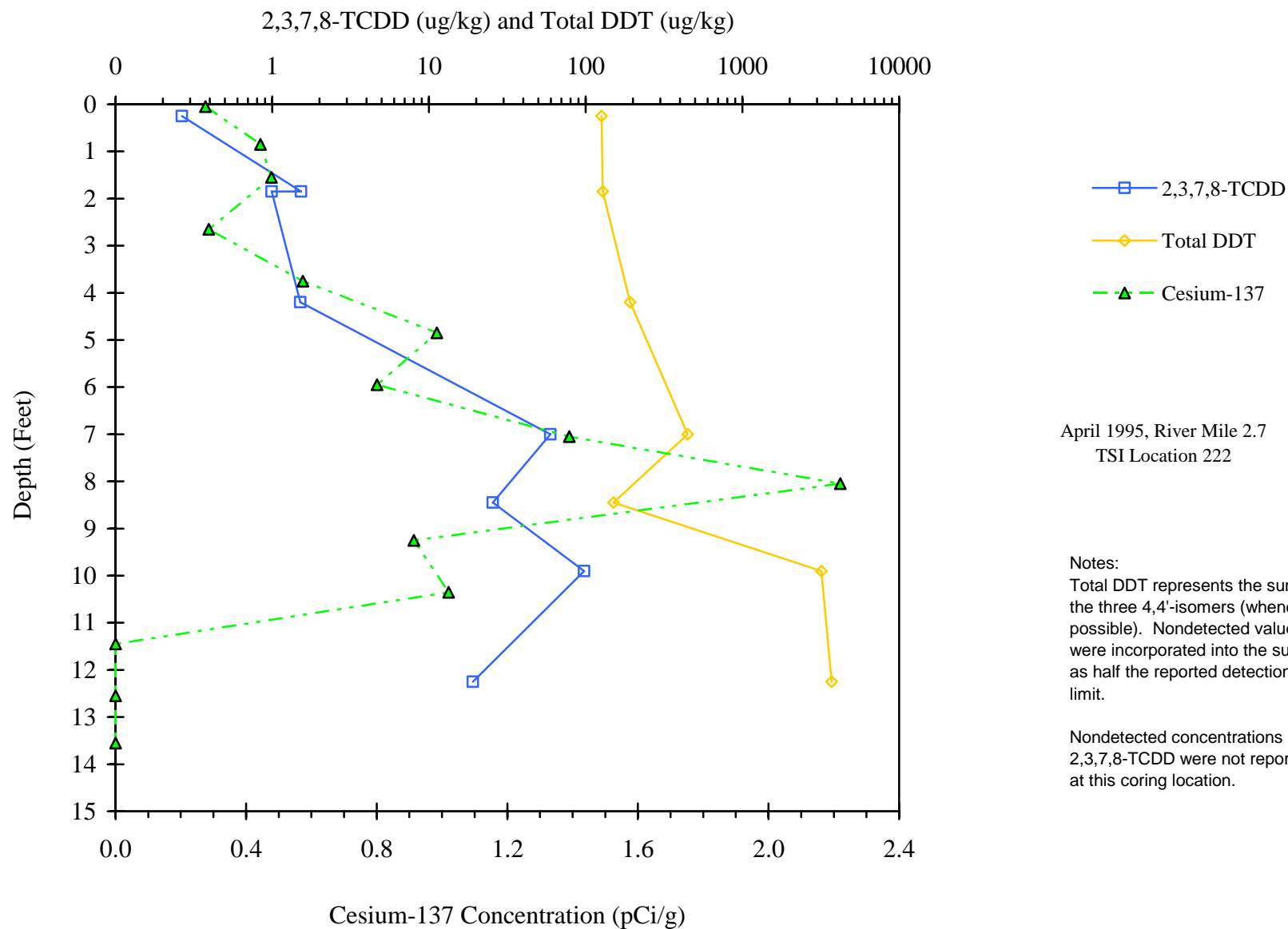


2,3,7,8-TCDD and Total DDT Downcore Profile  
(River Mile 1.5, TSI Location 209)

Lower Passaic River Restoration Project

Figure 13-23a

September 2008

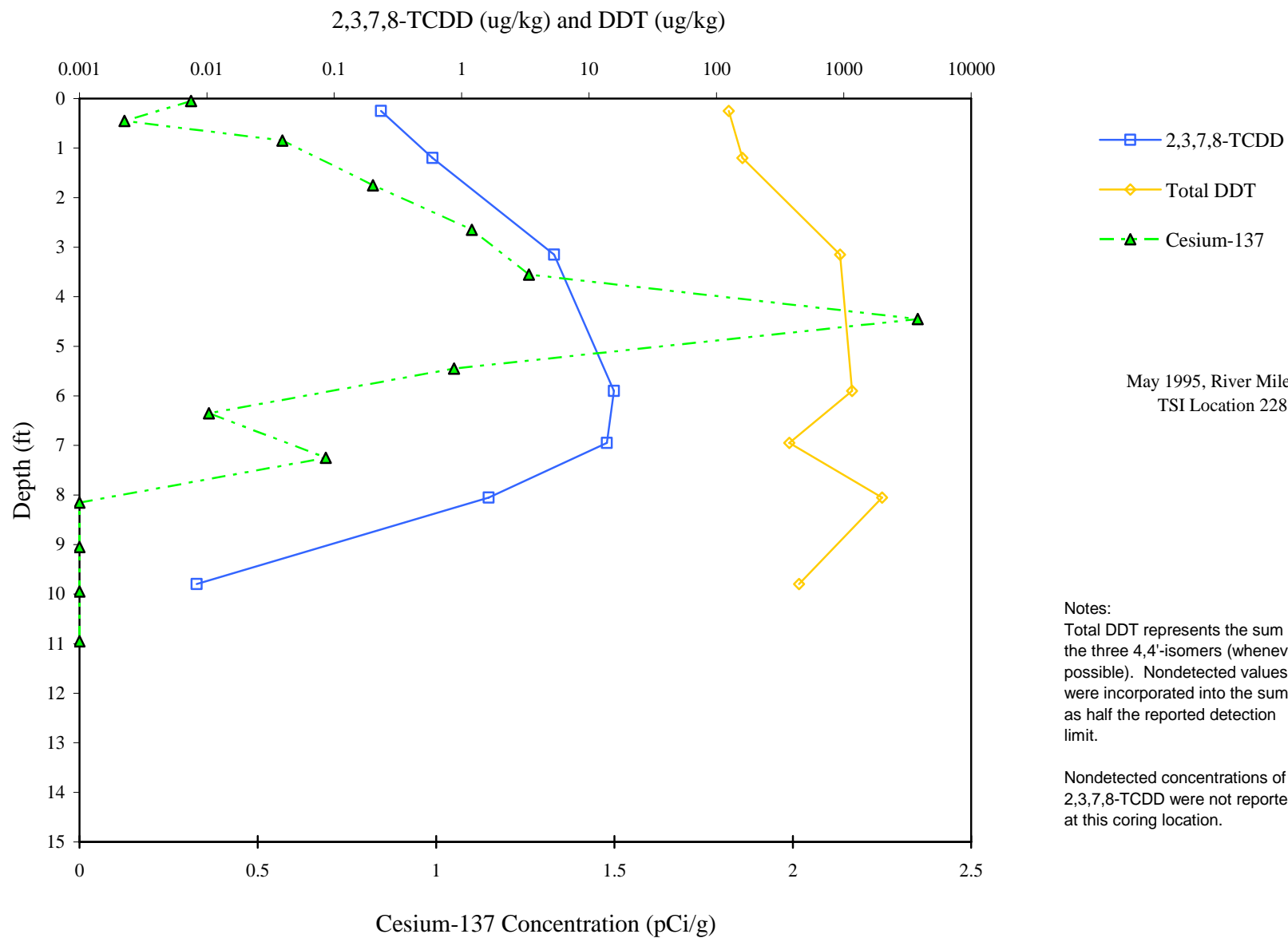


2,3,7,8-TCDD and Total DDT Downcore Profile  
(River Mile 2.7, TSI Location 222)

*Lower Passaic River Restoration Project*

Figure 13-23b

September 2008

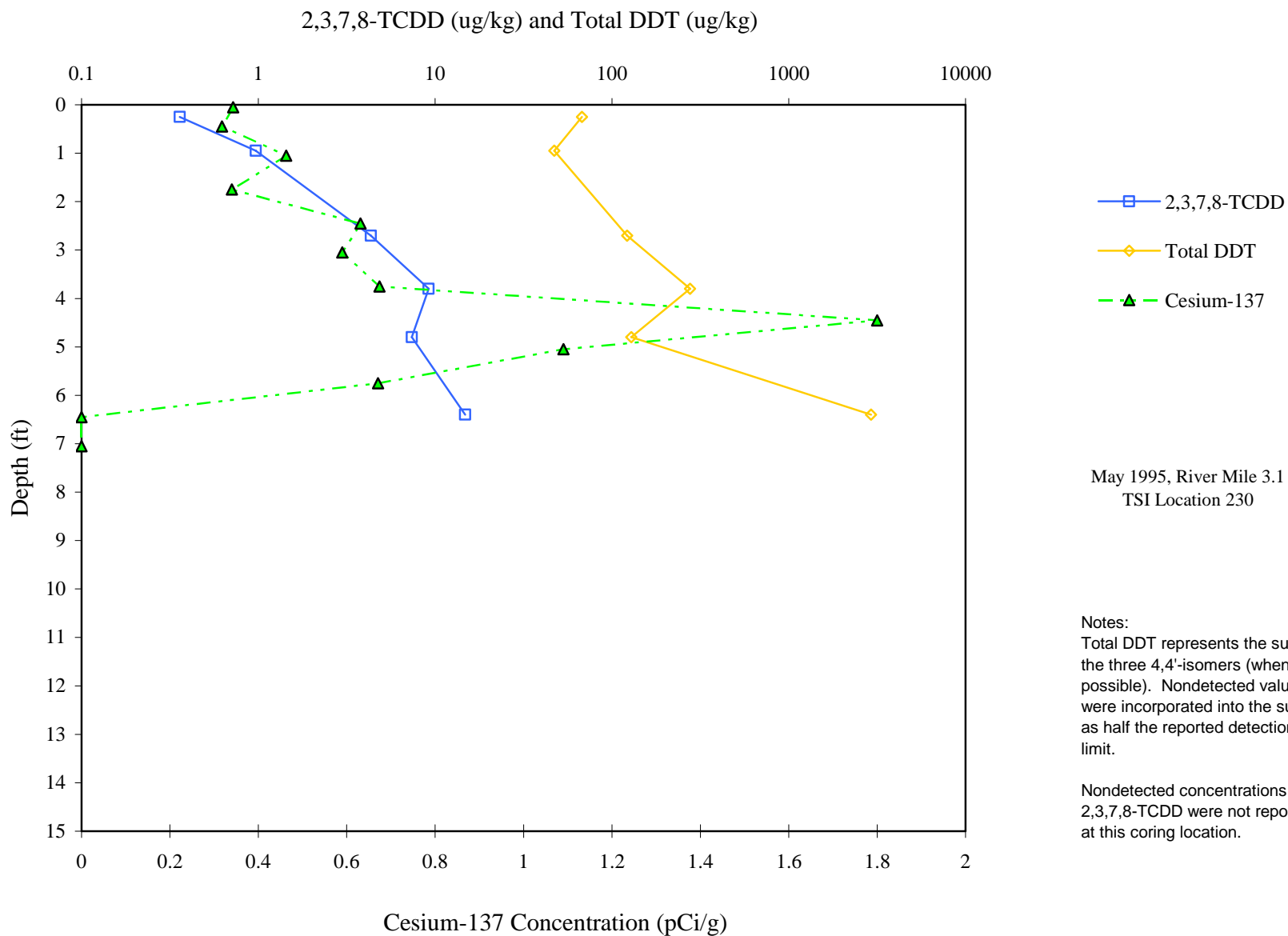


2,3,7,8-TCDD and Total DDT Downcore Profile  
(River Mile 3.1, TSI Location 228)

*Lower Passaic River Restoration Project*

Figure 13-23c

September 2008



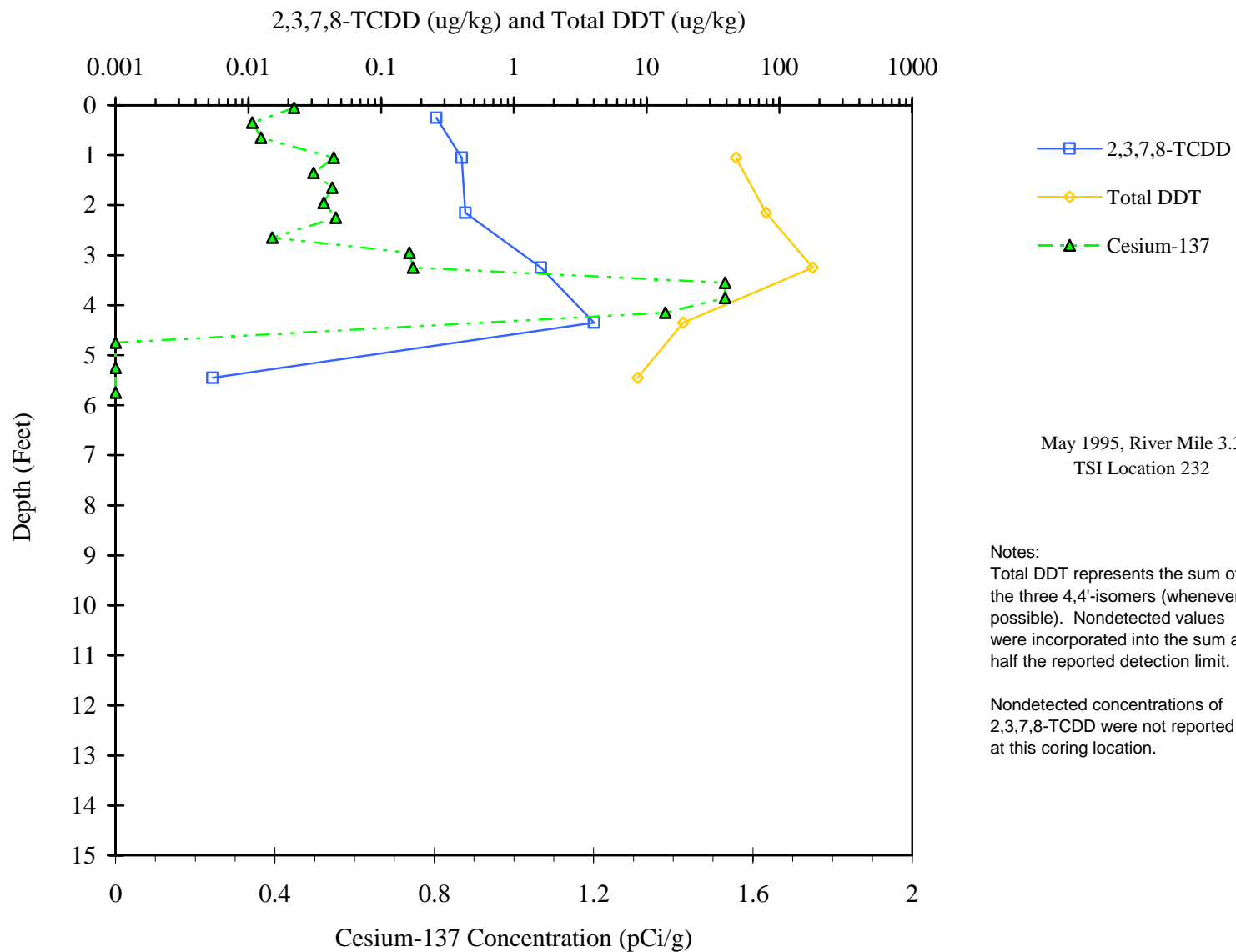
2,3,7,8-TCDD and Total DDT Downcore Profile  
(River Mile 3.1, TSI Location 230)

*Lower Passaic River Restoration Project*

Figure 13-23d

September 2008



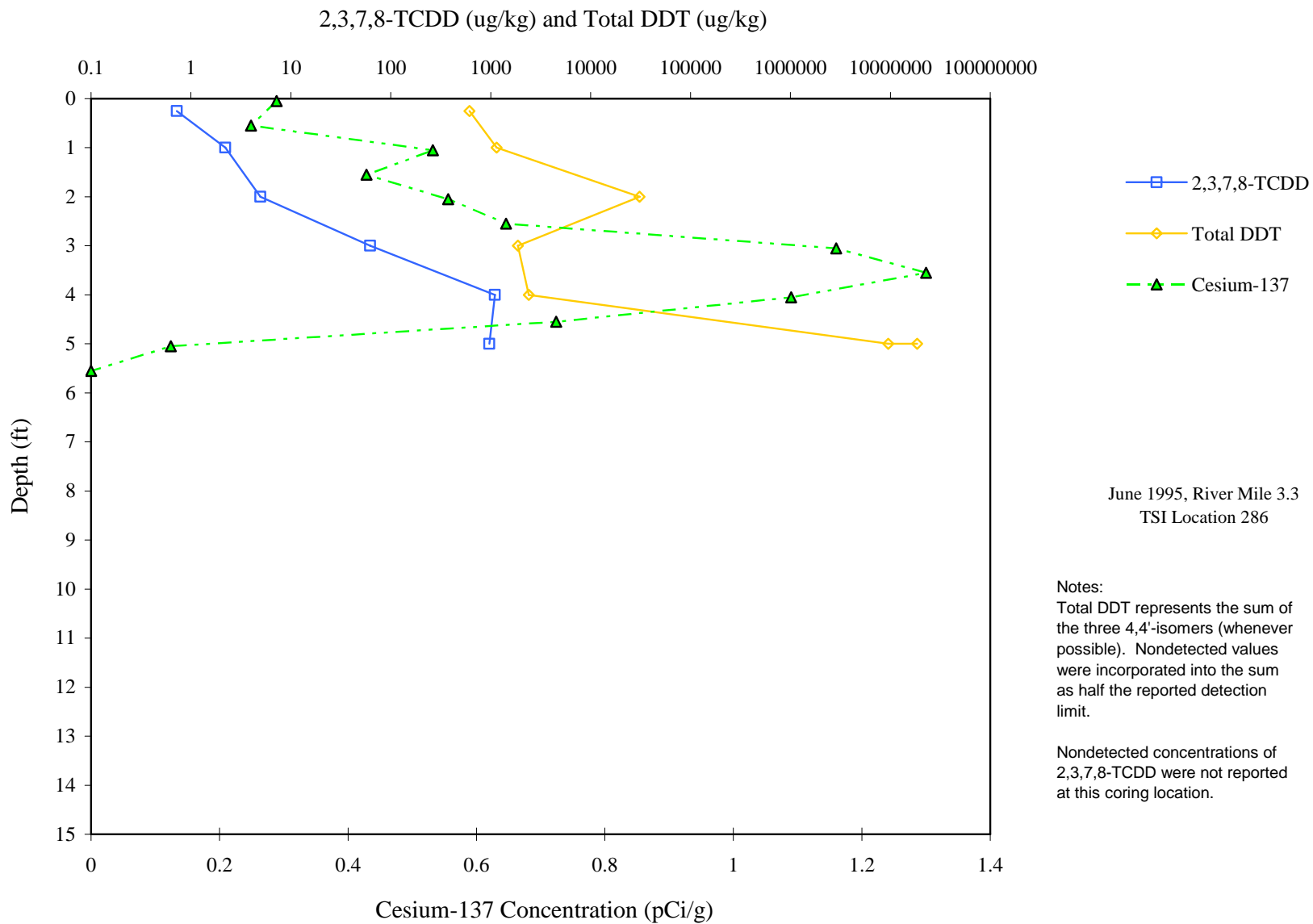


2,3,7,8-TCDD and Total DDT Downcore Profile  
(River Mile 3.3, TSI Location 232)

*Lower Passaic River Restoration Project*

Figure 13-23e

September 2008

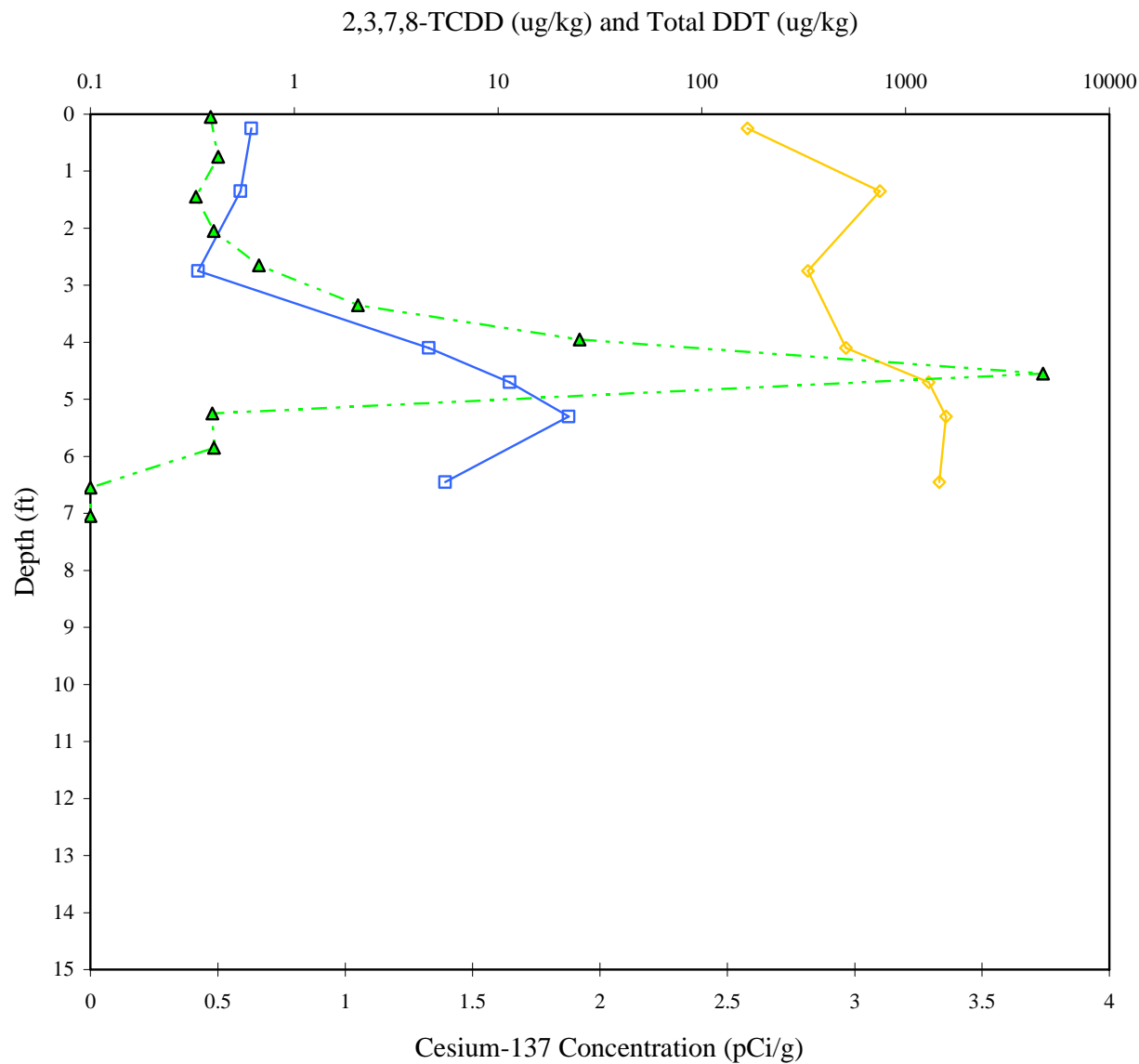


2,3,7,8-TCDD and Total DDT Downcore Profile  
(River Mile 3.3, TSI Location 286)

*Lower Passaic River Restoration Project*

Figure 13-23f

September 2008



May 1995, River Mile 3.6  
TSI Location 235

Notes:  
Total DDT represents the sum of the three 4,4'-isomers (whenever possible). Nondetected values were incorporated into the sum as half the reported detection limit.

Nondetected concentrations of 2,3,7,8-TCDD were not reported at this coring location.

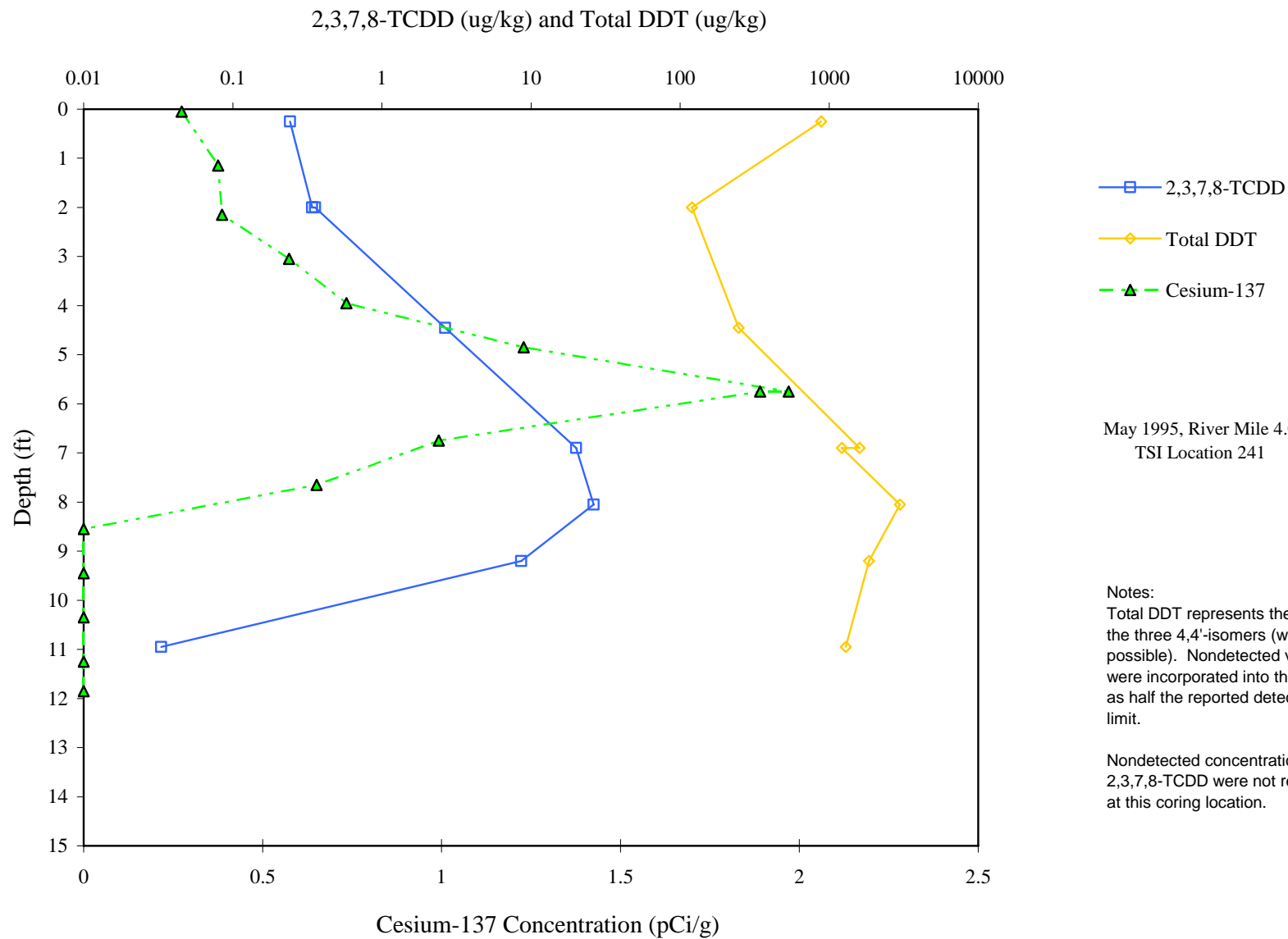


2,3,7,8-TCDD and Total DDT Downcore Profile  
(River Mile 3.6, TSI Location 235)

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Figure 13-23g

September 2008

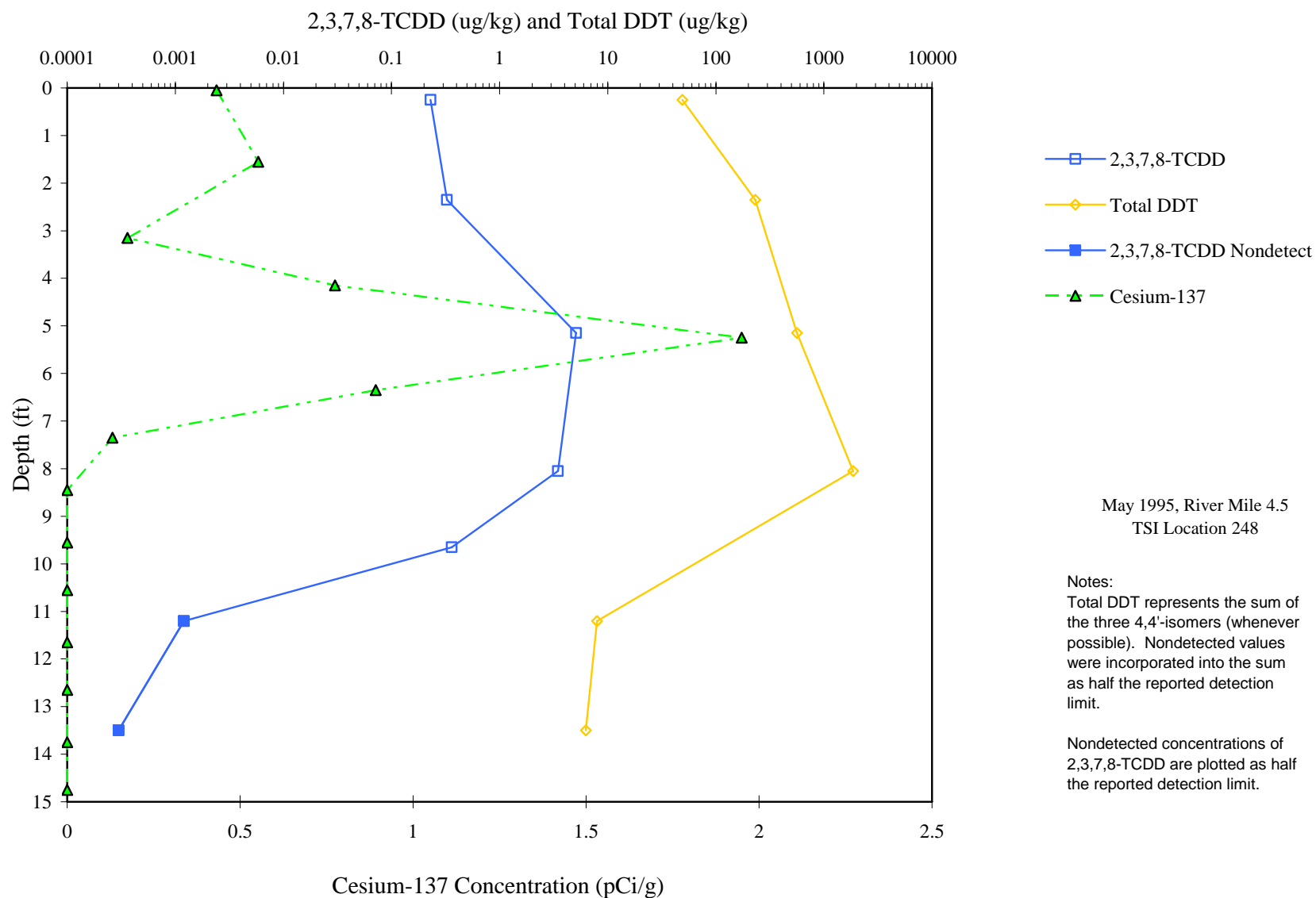


2,3,7,8-TCDD and Total DDT Downcore Profile  
(River Mile 4.0, TSI Location 241)

*Lower Passaic River Restoration Project*

Figure 13-23h

September 2008

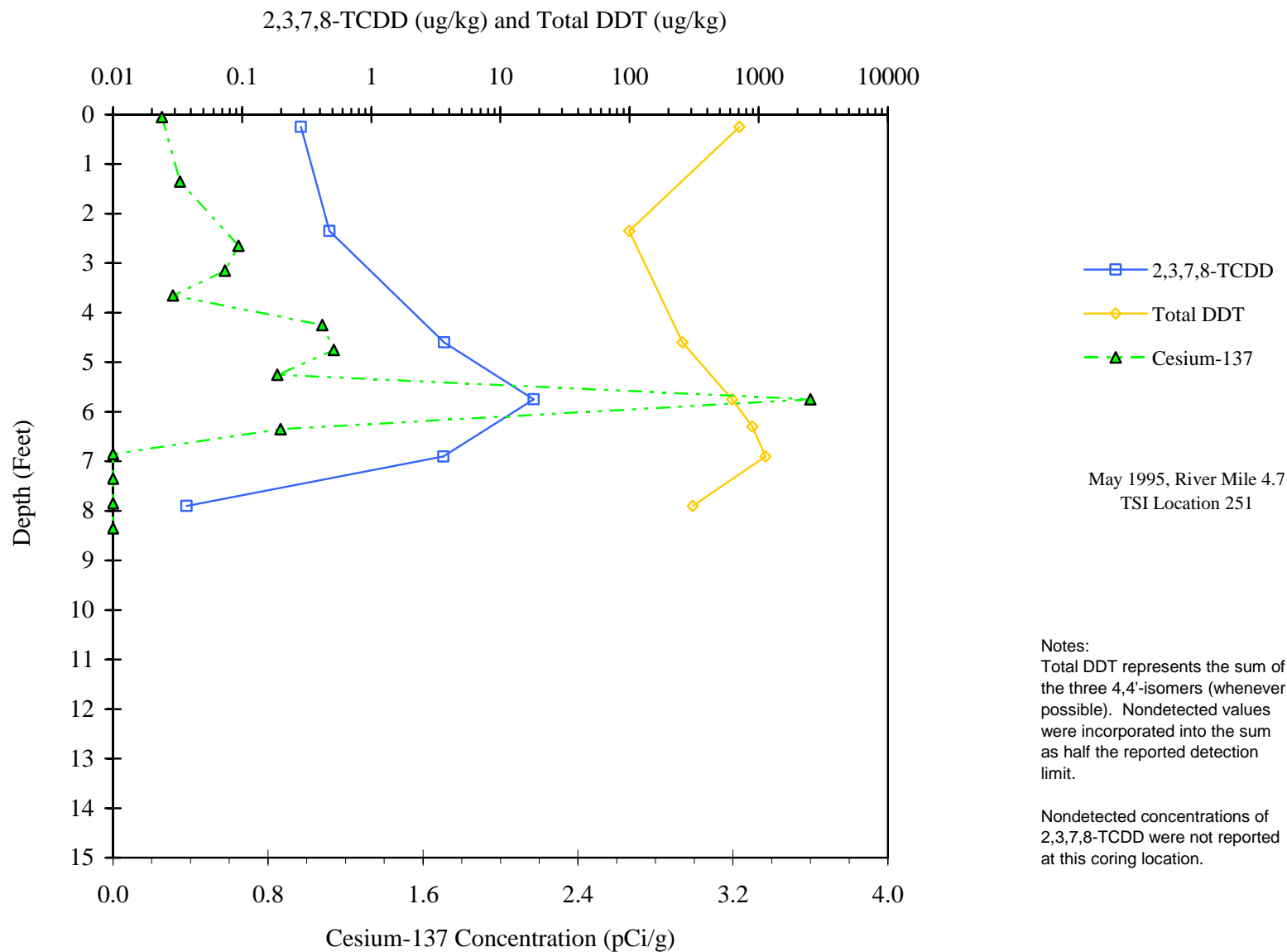


2,3,7,8-TCDD and Total DDT Downcore Profile  
(River Mile 4.5, TSI Location 248)

Lower Passaic River Restoration Project

Figure 13-23i

September 2008

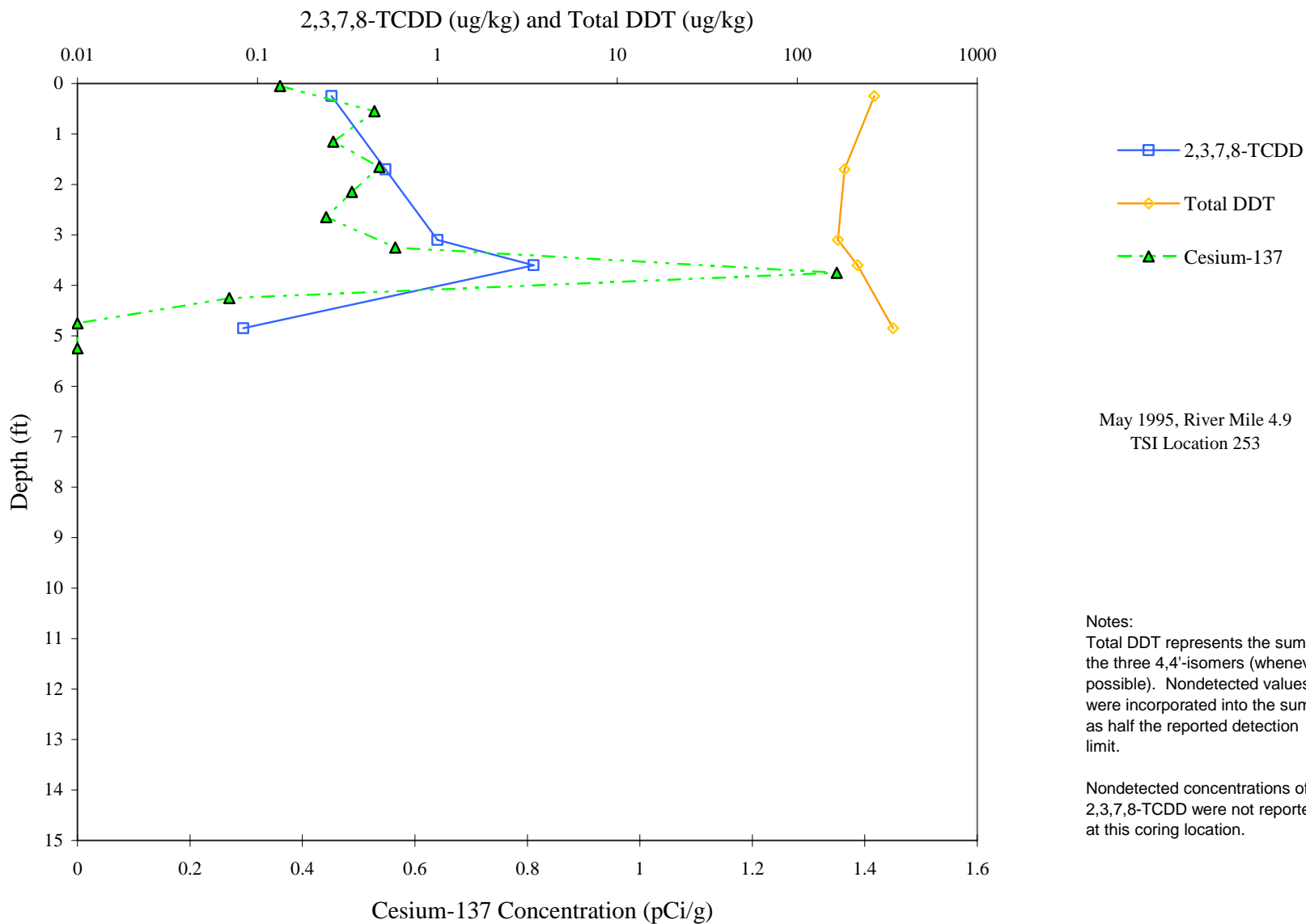


2,3,7,8-TCDD and Total DDT Downcore Profile  
(River Mile 4.7, TSI Location 251)

*Lower Passaic River Restoration Project*

Figure 13-23j

September 2008

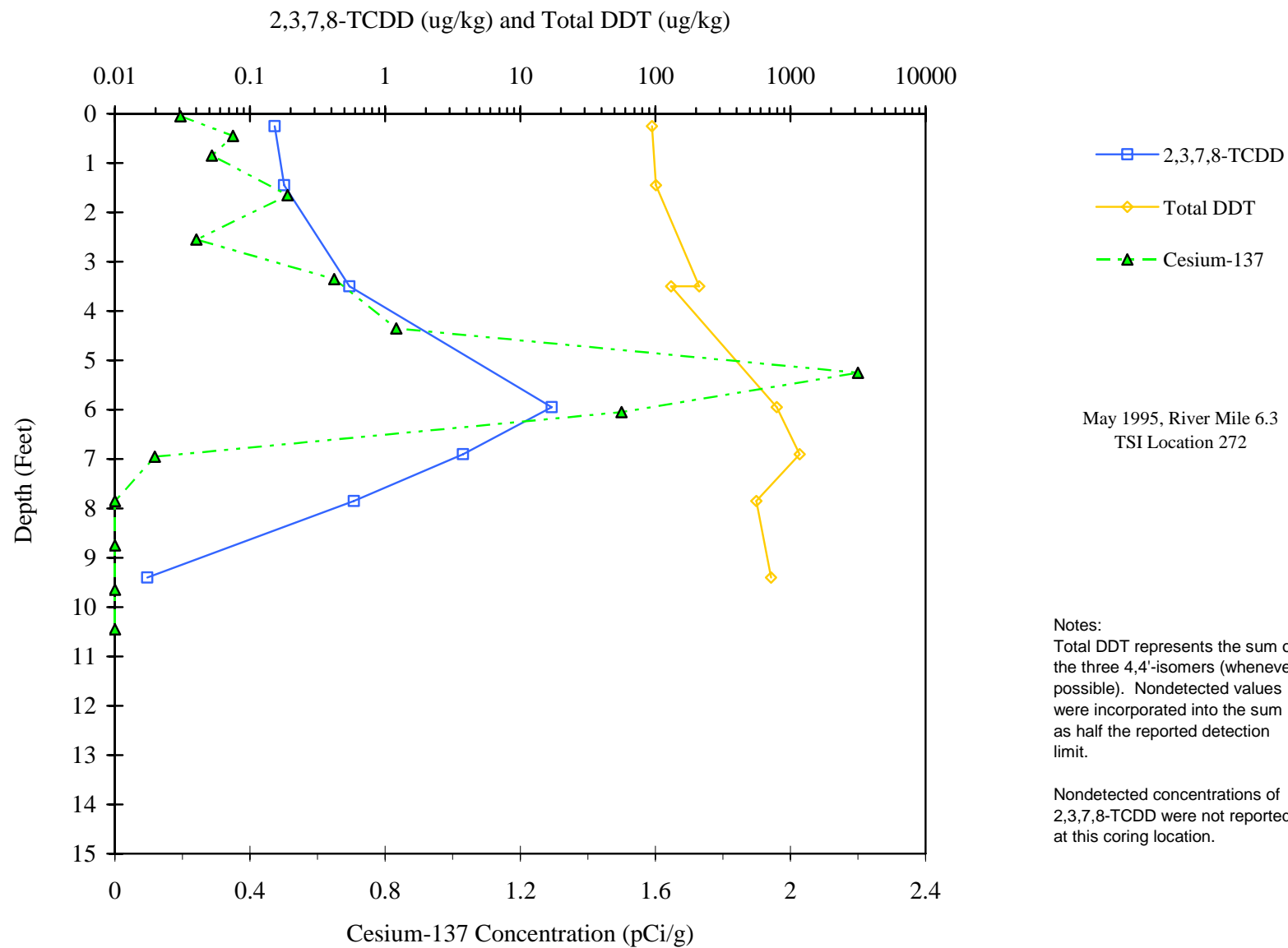


2,3,7,8-TCDD and Total DDT Downcore Profile  
(River Mile 4.9, TSI Location 253)

Lower Passaic River Restoration Project

Figure 13-23k

September 2008



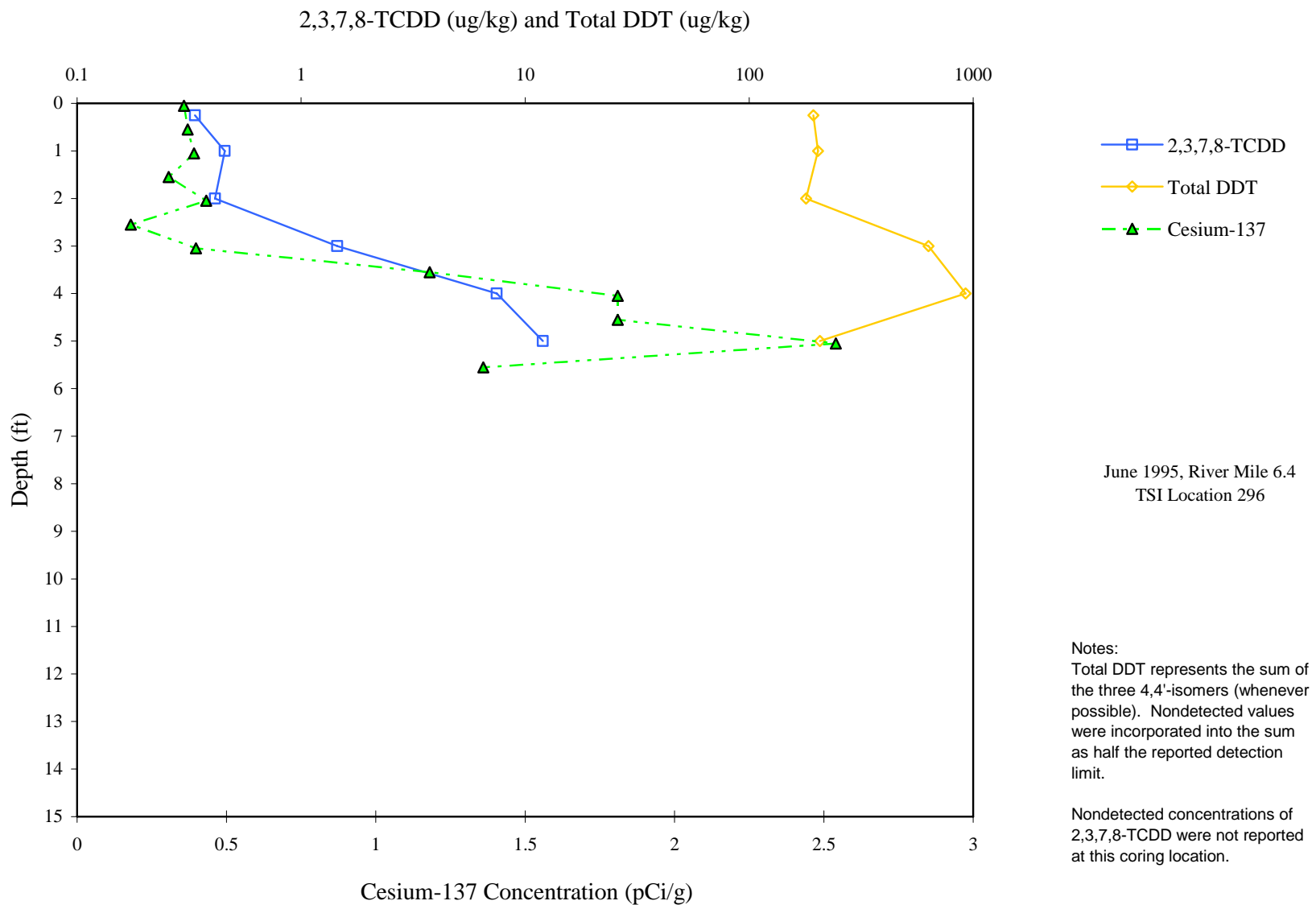
2,3,7,8-TCDD and Total DDT Downcore Profile  
(River Mile 6.3, TSI Location 272)

Lower Passaic River Restoration Project

Figure 13-23I

September 2008



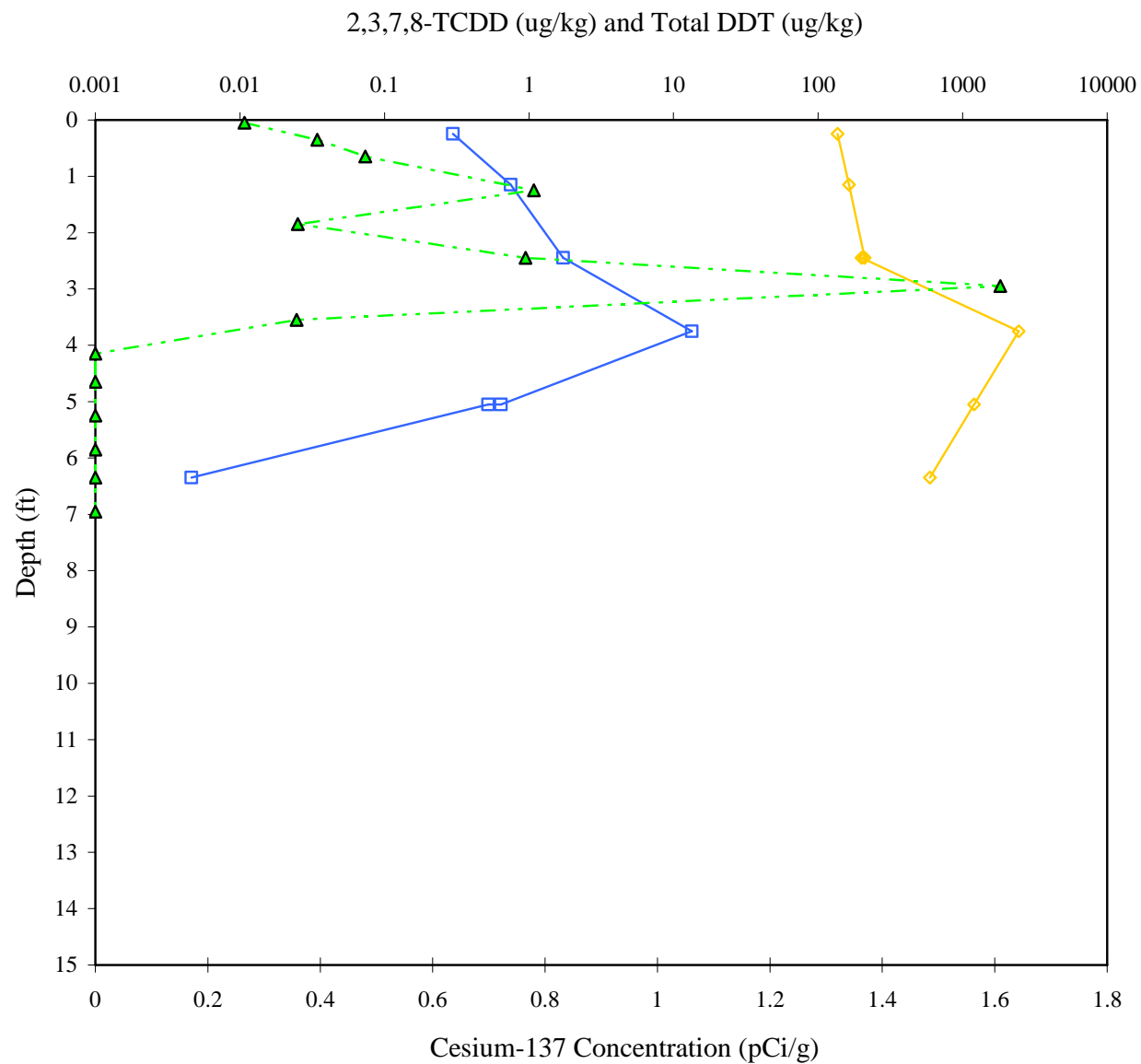


2,3,7,8-TCDD and Total DDT Downcore Profile  
(River Mile 6.4, TSI Location 296)

Lower Passaic River Restoration Project

Figure 13-23m

September 2008

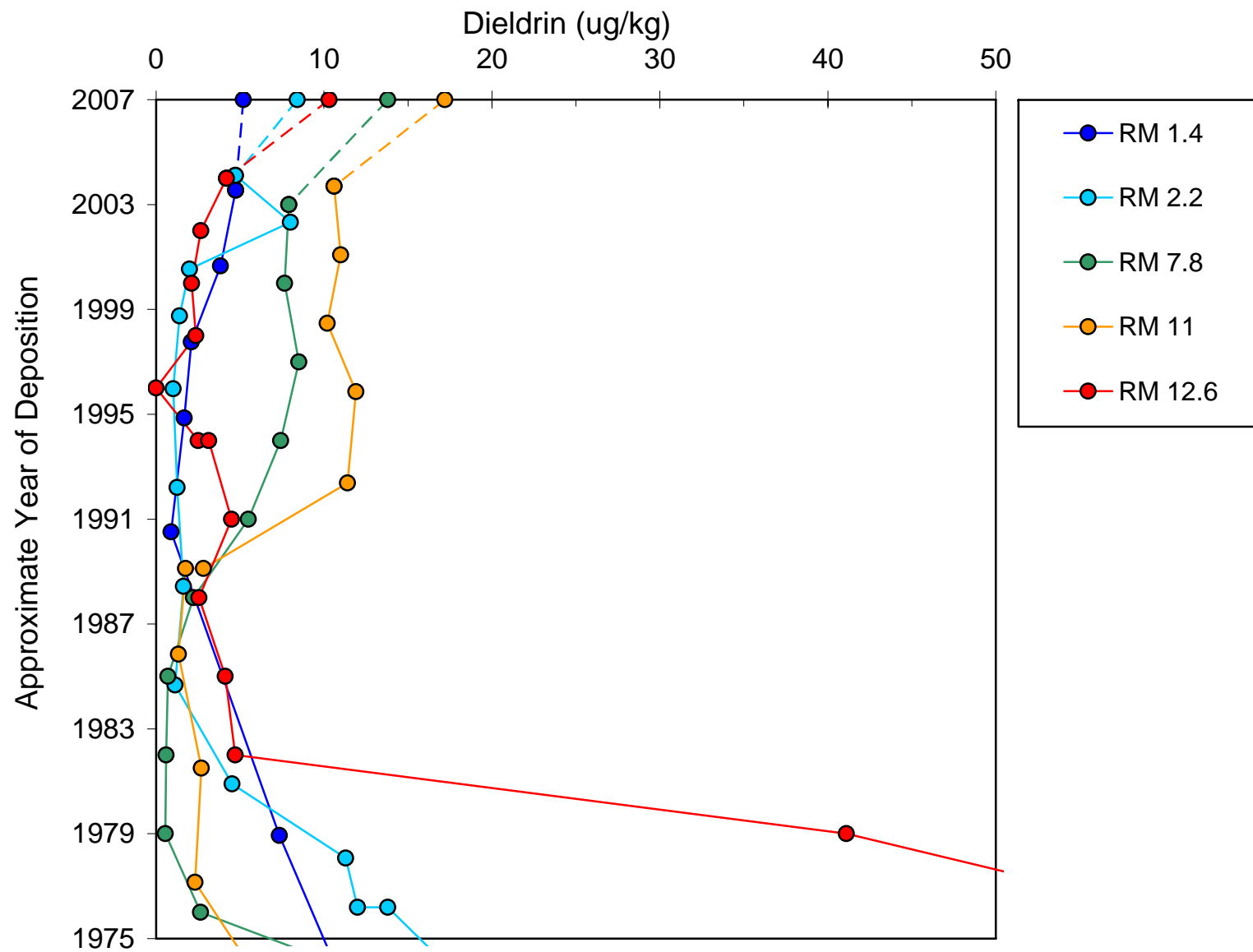


2,3,7,8-TCDD and Total DDT Downcore Profile  
(River Mile 6.5, TSI Location 275)

*Lower Passaic River Restoration Project*

Figure 13-23n

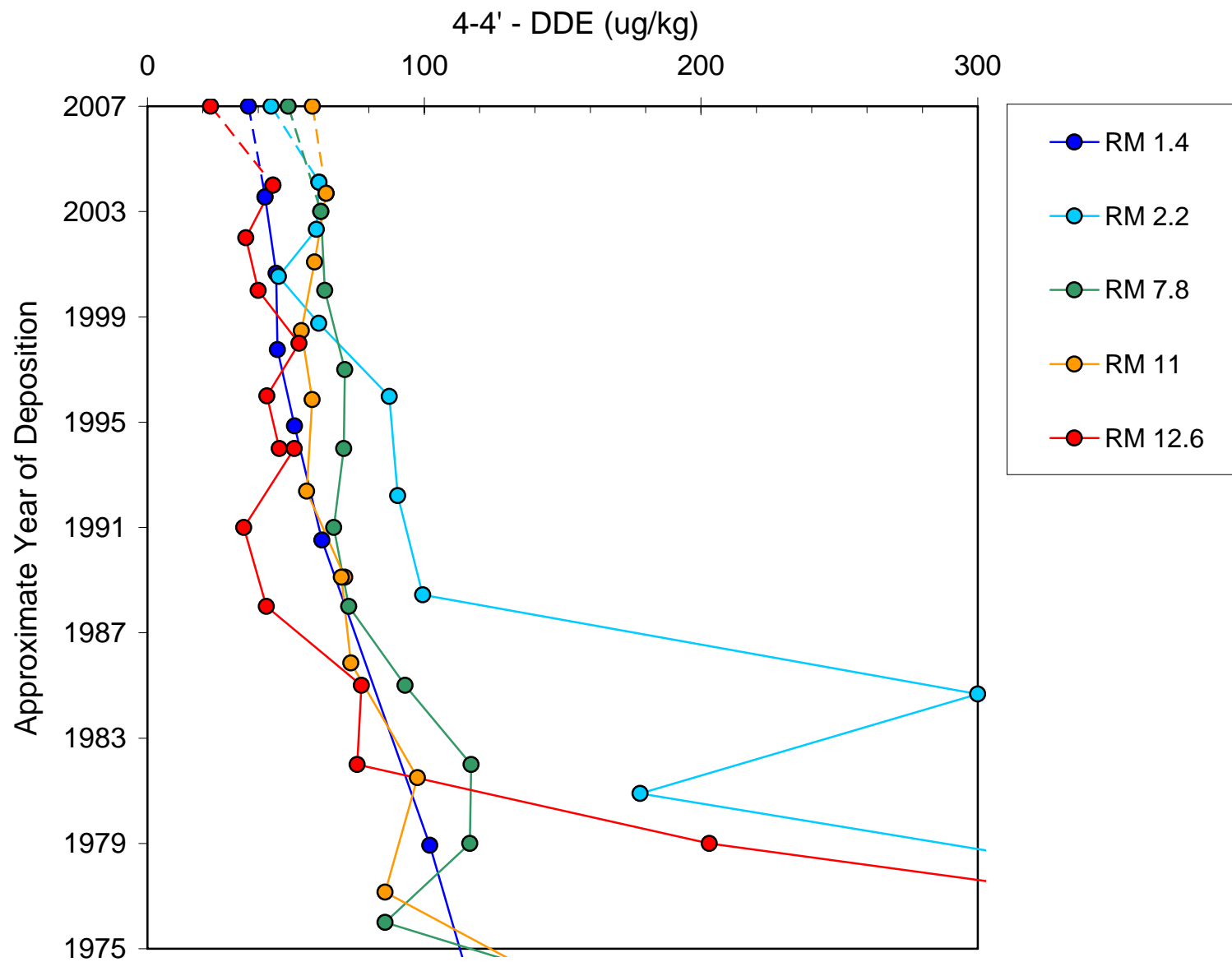
September 2008



Dieldrin Downcore Profile  
Lower Passaic River Restoration Project

Figure 13-24

September 2008



4,4'-DDE Downcore Profile

Lower Passaic River Restoration Project

Figure 13-25

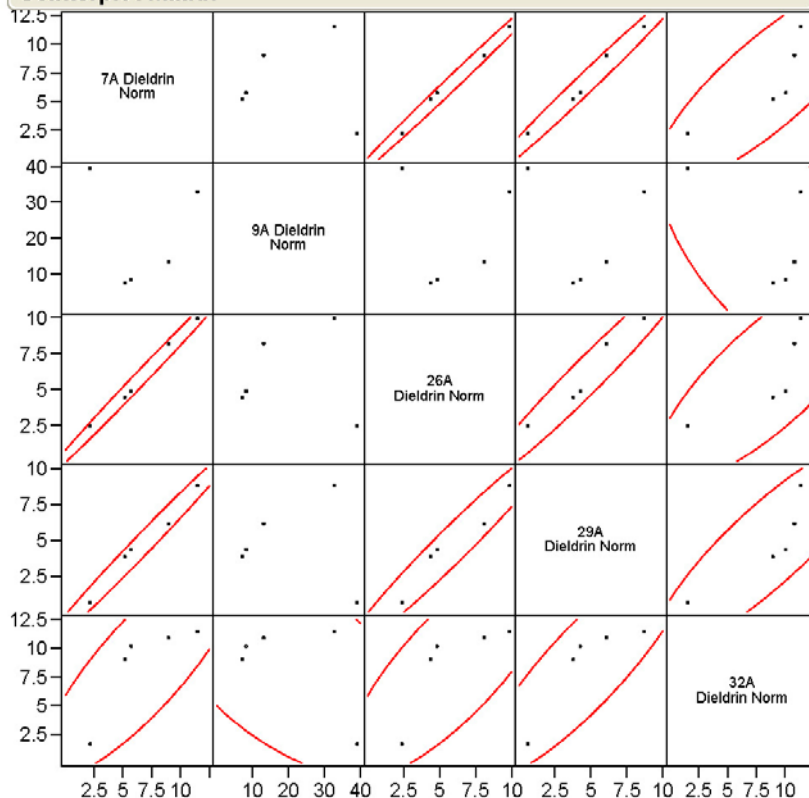
September 2008

## Multivariate

### Correlations

	7A Dieldrin Norm	9A Dieldrin Norm	26A Dieldrin Norm	29A Dieldrin Norm	32A Dieldrin Norm
7A Dieldrin Norm	1.0000	-0.0474	0.9959	0.9915	0.8338
9A Dieldrin Norm	-0.0474	1.0000	0.0013	-0.1104	-0.5734
26A Dieldrin Norm	0.9959	0.0013	1.0000	0.9757	0.7952
29A Dieldrin Norm	0.9915	-0.1104	0.9757	1.0000	0.8745
32A Dieldrin Norm	0.8338	-0.5734	0.7952	0.8745	1.0000

### Scatterplot Matrix



## Legend

- Normalized Pesticides

## Notes

Identification numbers 7A, 9A, 26A, 29A, and 32A correspond to field location numbers.

Pesticides normalized to dieldrin.

Data Source: JMP Version 6.0.0 "Statistical Discovery" from SAS Institute Inc.

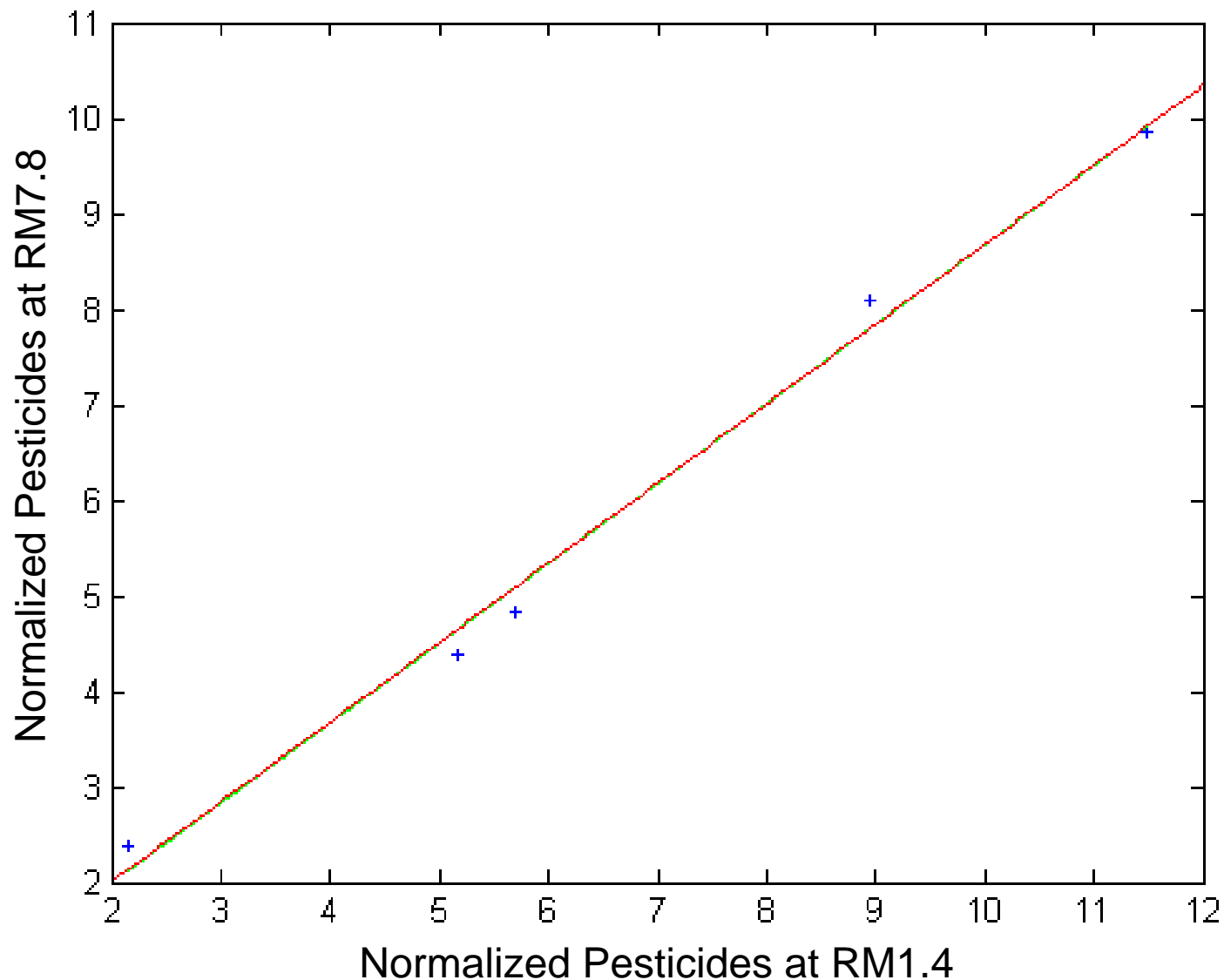


Correlation of Pesticides Compounds for the Lower Passaic River Surface Sediments

Lower Passaic River Restoration Project

Figure 13-26

September 2008



## Legend

- + Normalized Pesticides
- Linear Regression
- Robust Regression

## Notes

Linear Regression:  
 $y = 0.83x + 0.34$   
 $R^2 = 0.99188$

Robust Regression:  
 $y = 0.8340x + (0.3350)$   
 $R^2 = 0.91458$

Pesticides normalized to dieldrin.

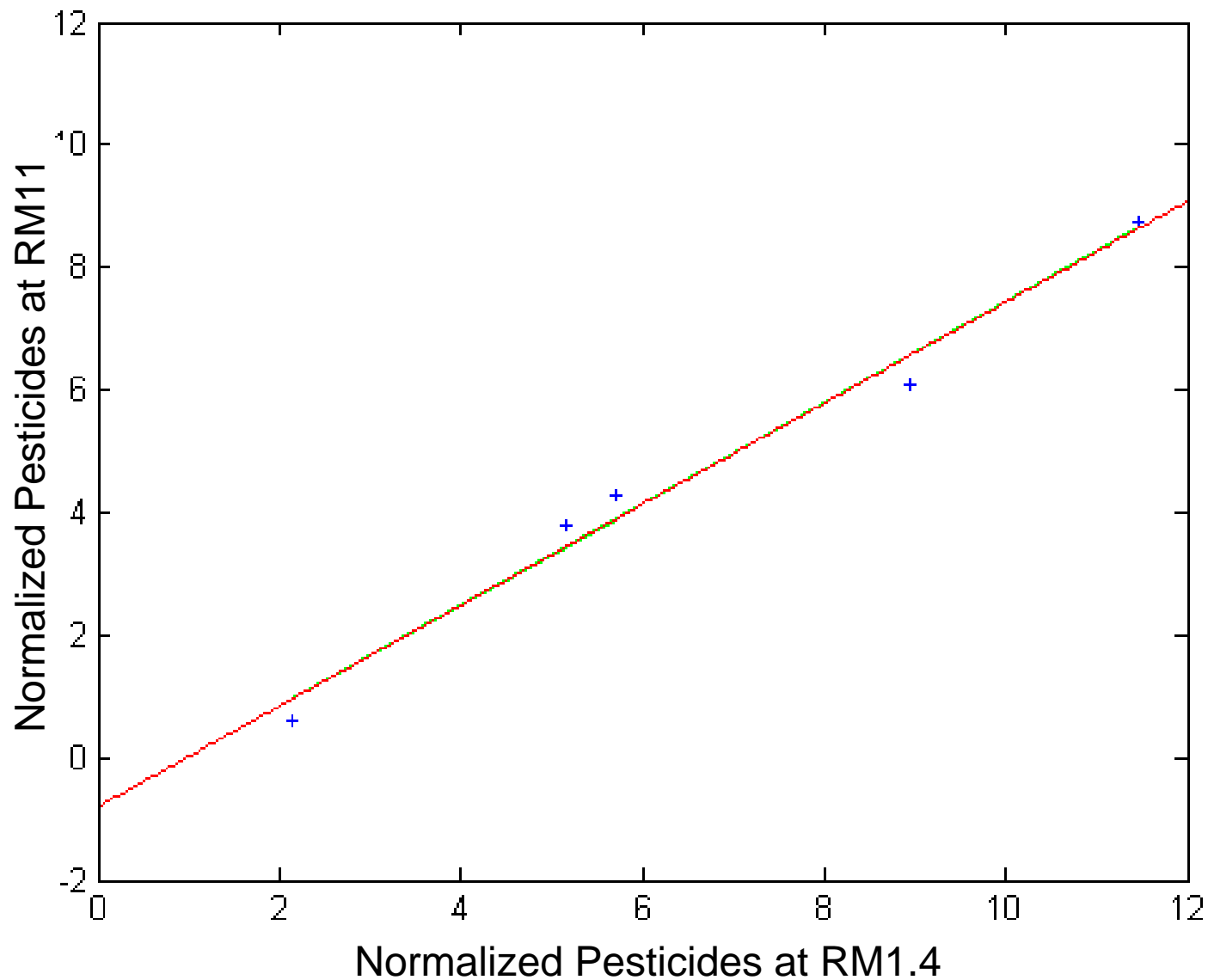


Comparison of Linear Regression and Robust Regression for  
Pesticides Compounds in the Lower Passaic River Surface Sediments

*Lower Passaic River Restoration Project*

Figure 13-27a

September 2008



## Legend

- + Normalized Pesticides
- Linear Regression
- Robust Regression

## Notes

Linear Regression:

$$y = 0.82 \cdot x - 0.81$$

$$R^2 = 0.98298$$

Robust Regression:

$$y = 0.8243 \cdot x + (-0.8093)$$

$$R^2 = 0.59009$$

Pesticides normalized to dieldrin.

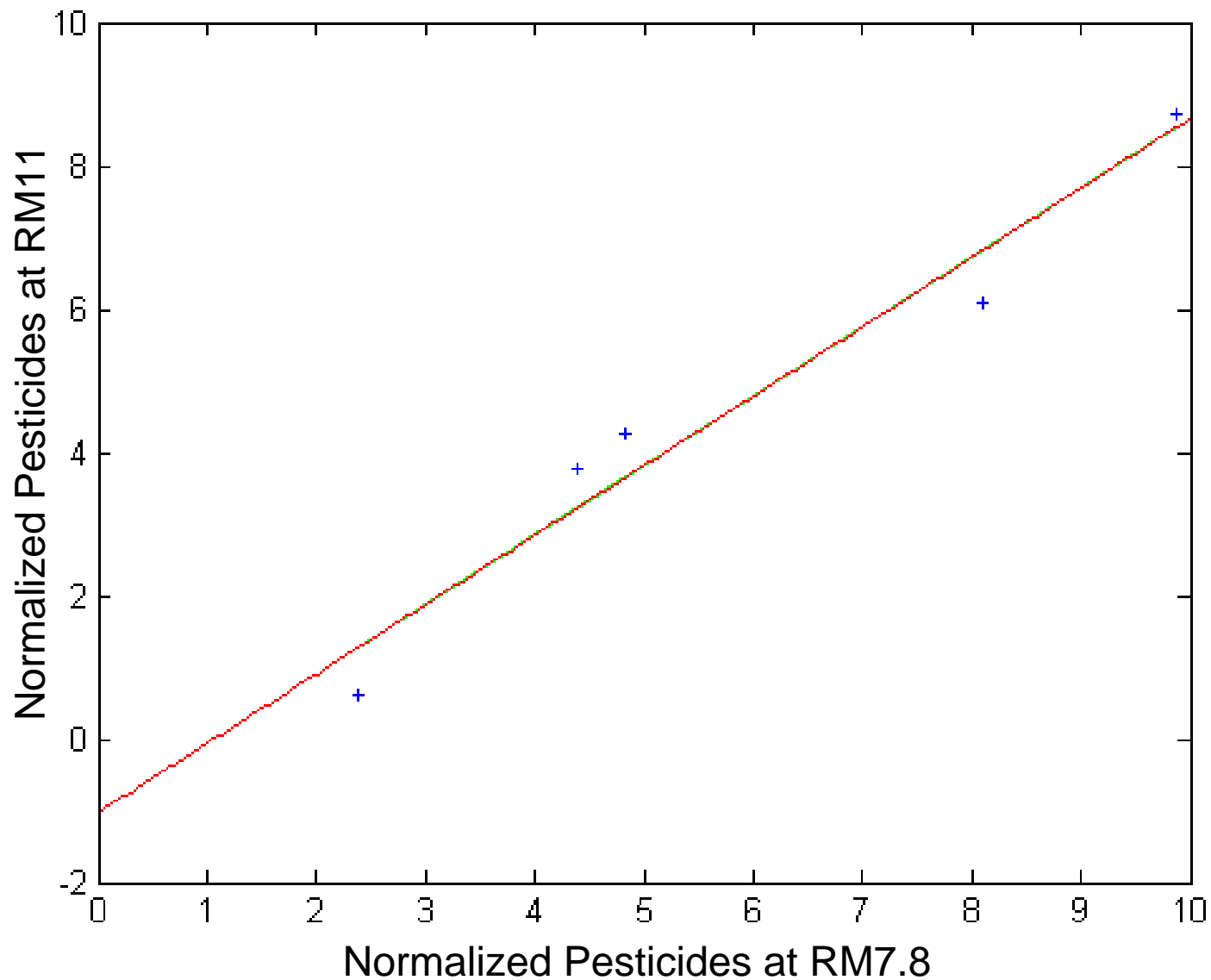


Comparison of Linear Regression and Robust Regression for PCB Congeners in the Lower Passaic River Surface Sediments

*Lower Passaic River Restoration Project*

Figure 13-27b

September 2008



Comparison of Linear Regression and Robust Regression for PCB Congeners in the Lower Passaic River Surface Sediments

*Lower Passaic River Restoration Project*

Figure 13-27c

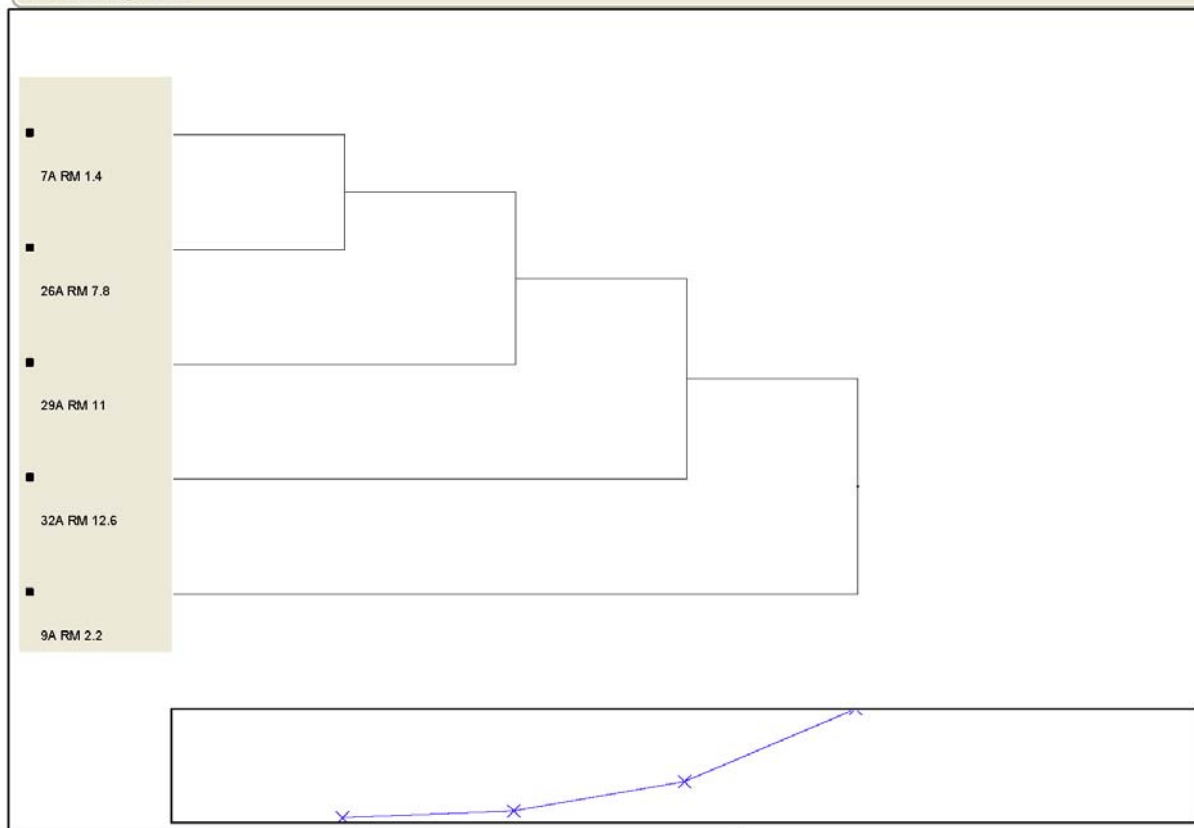
September 2008



## Hierarchical Clustering for Pesticides Normalized to Dieldrin

Method = Ward

### Dendrogram



### Clustering History

Number of Clusters	Distance	Leader	Joiner
4	0.127535775	7A RM 1.4	26A RM 7.8
3	0.286702558	7A RM 1.4	29A RM 11
2	0.984085832	7A RM 1.4	32A RM 12.6
1	2.711898948	7A RM 1.4	9A RM 2.2

## Legend

— Cluster Analysis

## Notes

Identification numbers 7A, 9A, 26A, 29A, and 32A correspond to field location numbers.

Data Source: JMP  
Version 6.0.0 "Statistical  
Discovery" from SAS  
Institute Inc.

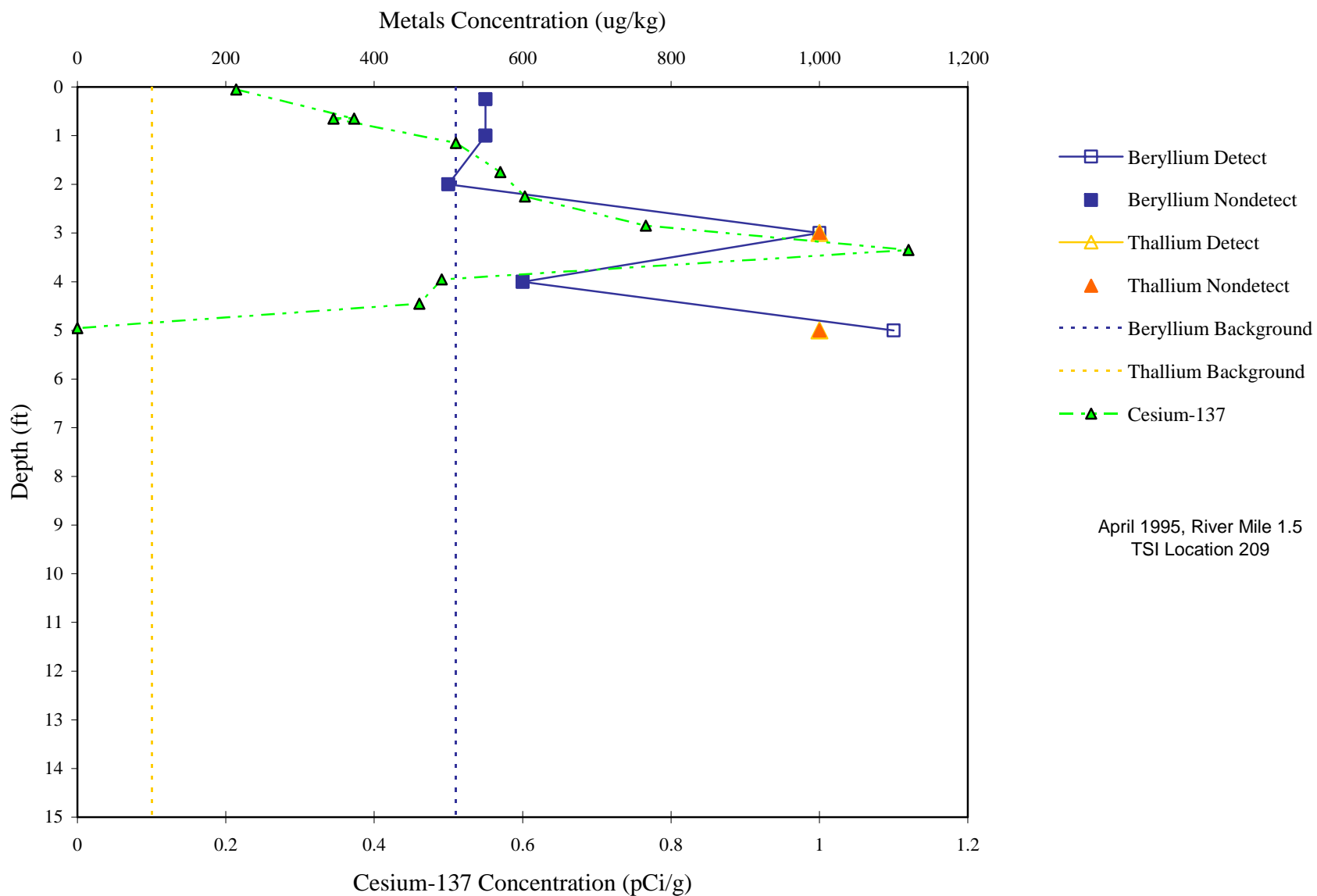


Cluster Analysis for Pesticide Compounds in Lower Passaic River  
Surface Sediments

*Lower Passaic River Restoration Project*

Figure 13-28

September 2008

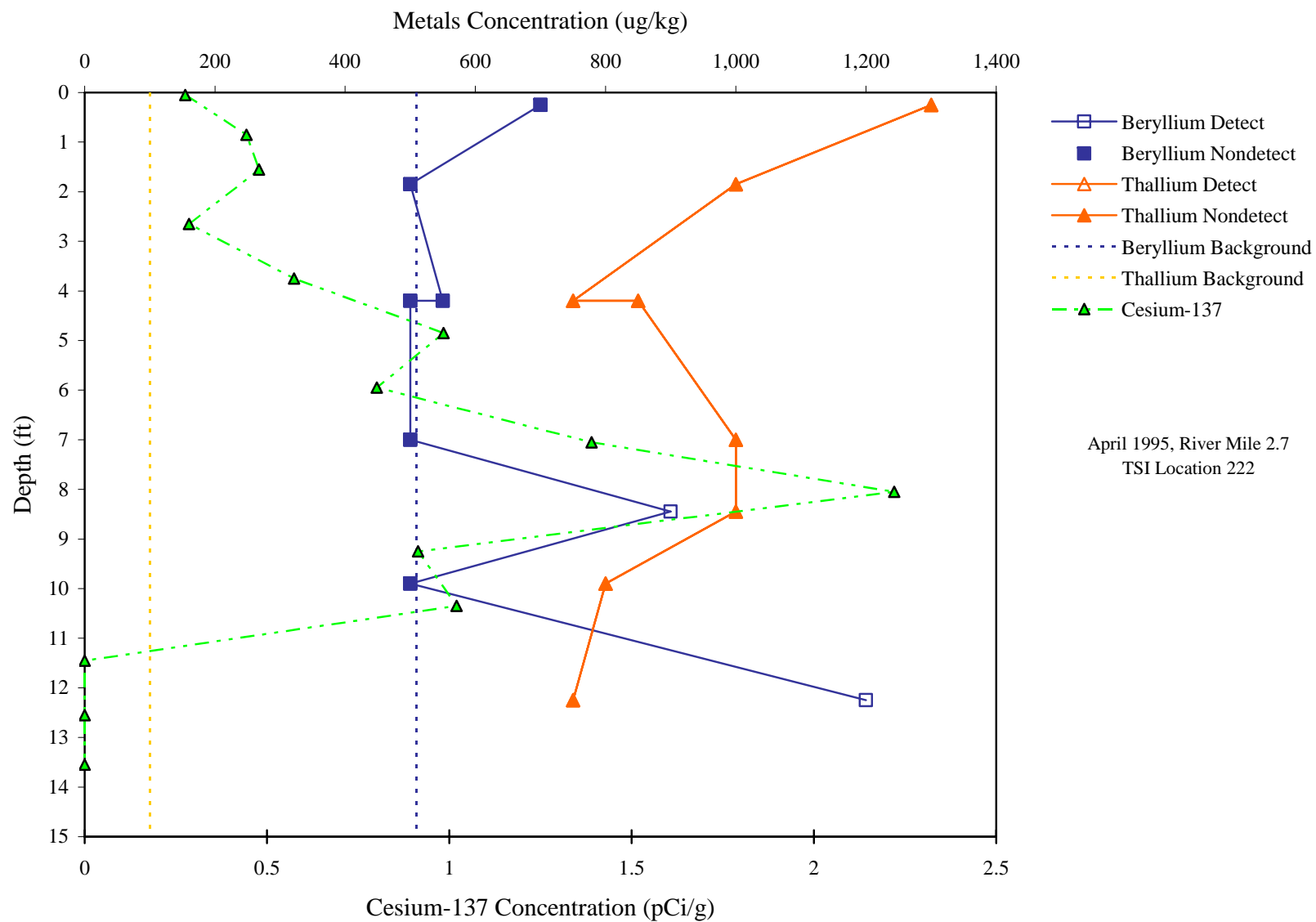


Beryllium and Thallium Downcore Profile  
(RM 1.5, TSI Location 209)

Lower Passaic River Restoration Project

Figure 13-29a

September 2008

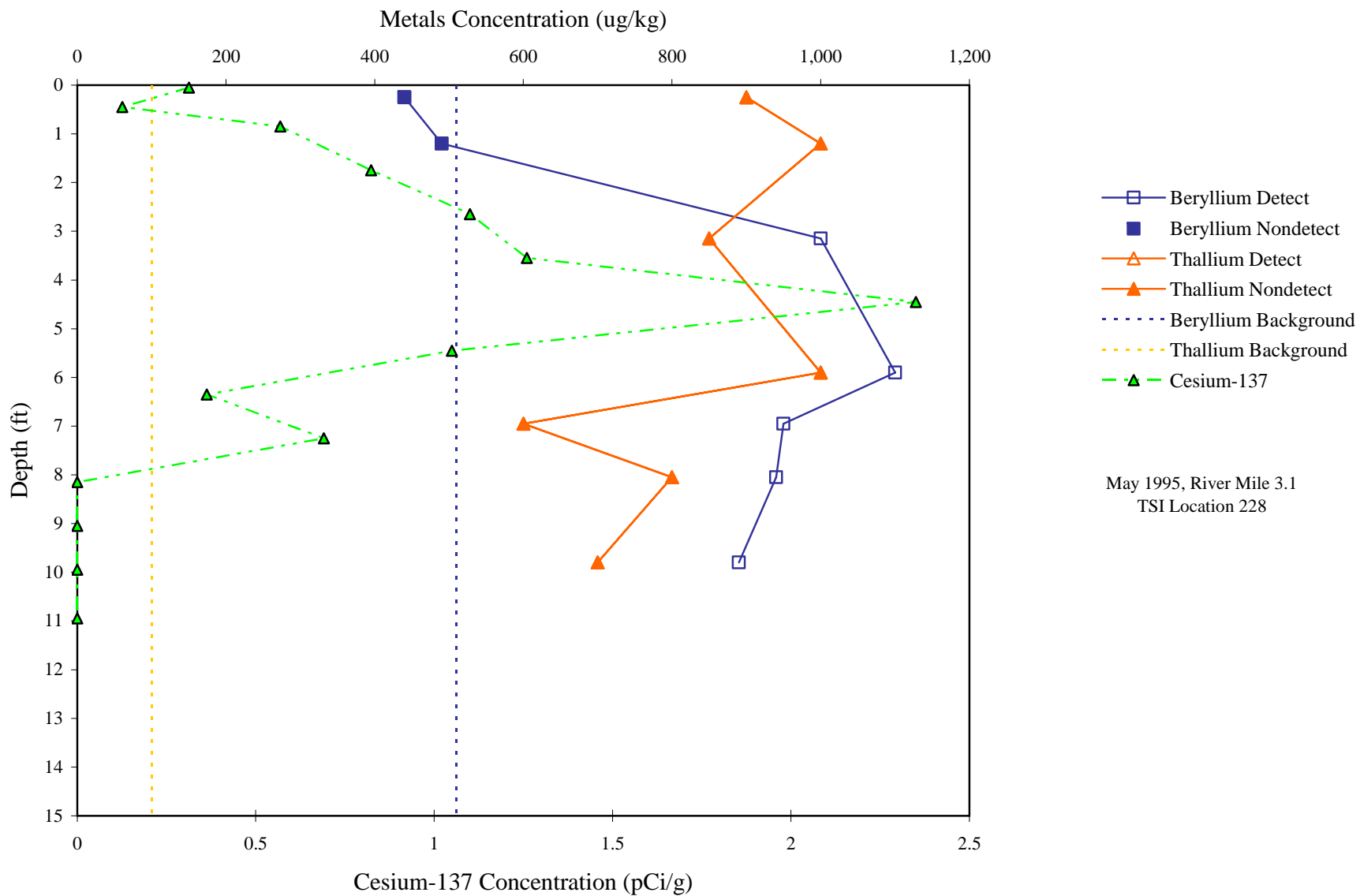


Beryllium and Thallium Downcore Profile  
(RM 2.7, TSI Location 222)

Lower Passaic River Restoration Project

Figure 13-29b

September 2008

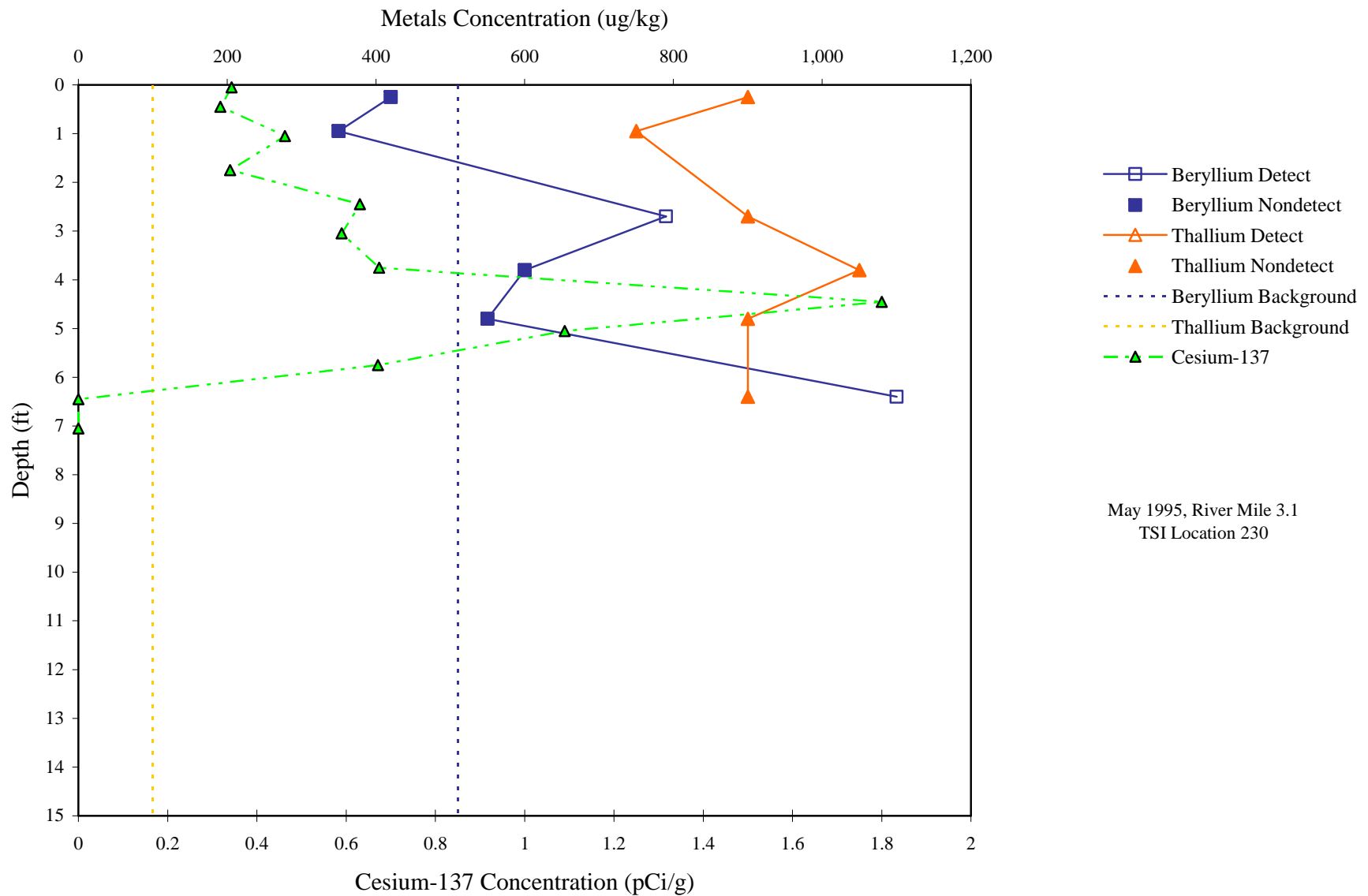


Beryllium and Thallium Downcore Profile  
(RM 3.1, TSI Location 228)

Lower Passaic River Restoration Project

Figure 13-29c

September 2008

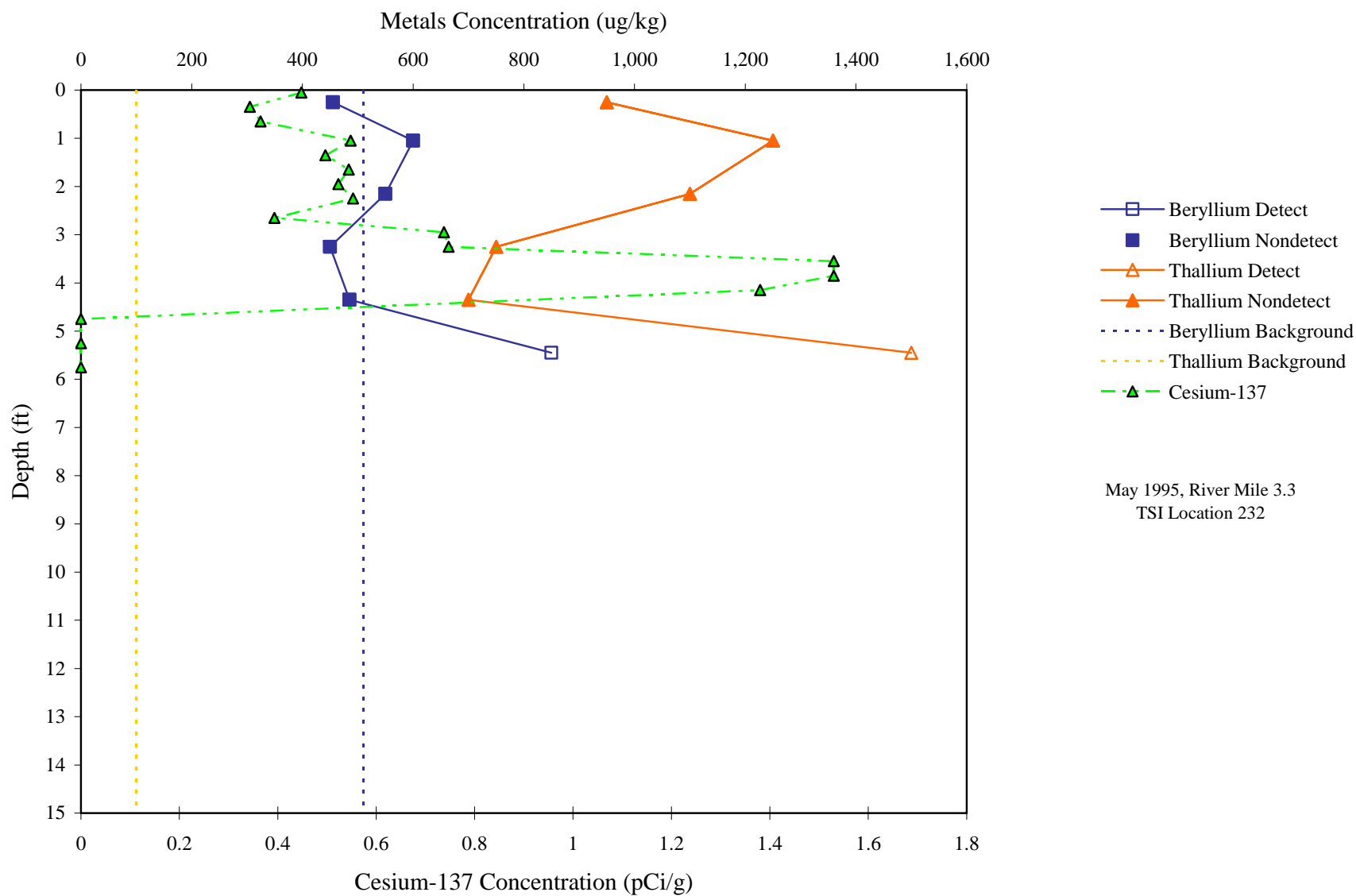


Beryllium and Thallium Downcore Profile  
(RM 3.1, TSI Location 230)

Lower Passaic River Restoration Project

Figure 13-29d

September 2008

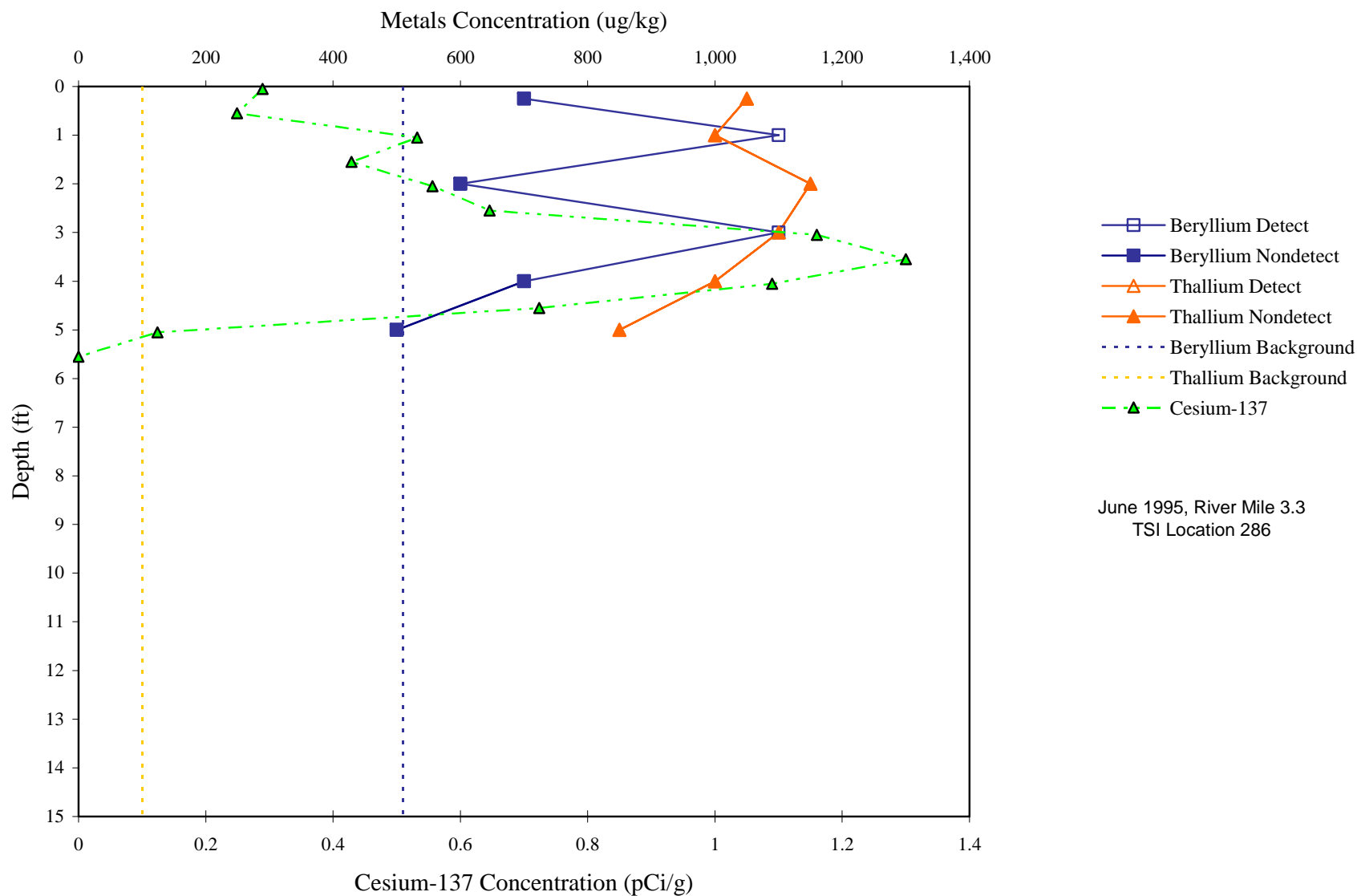


Beryllium and Thallium Downcore Profile  
(RM 3.3, TSI Location 232)

Lower Passaic River Restoration Project

Figure 13-29e

September 2008

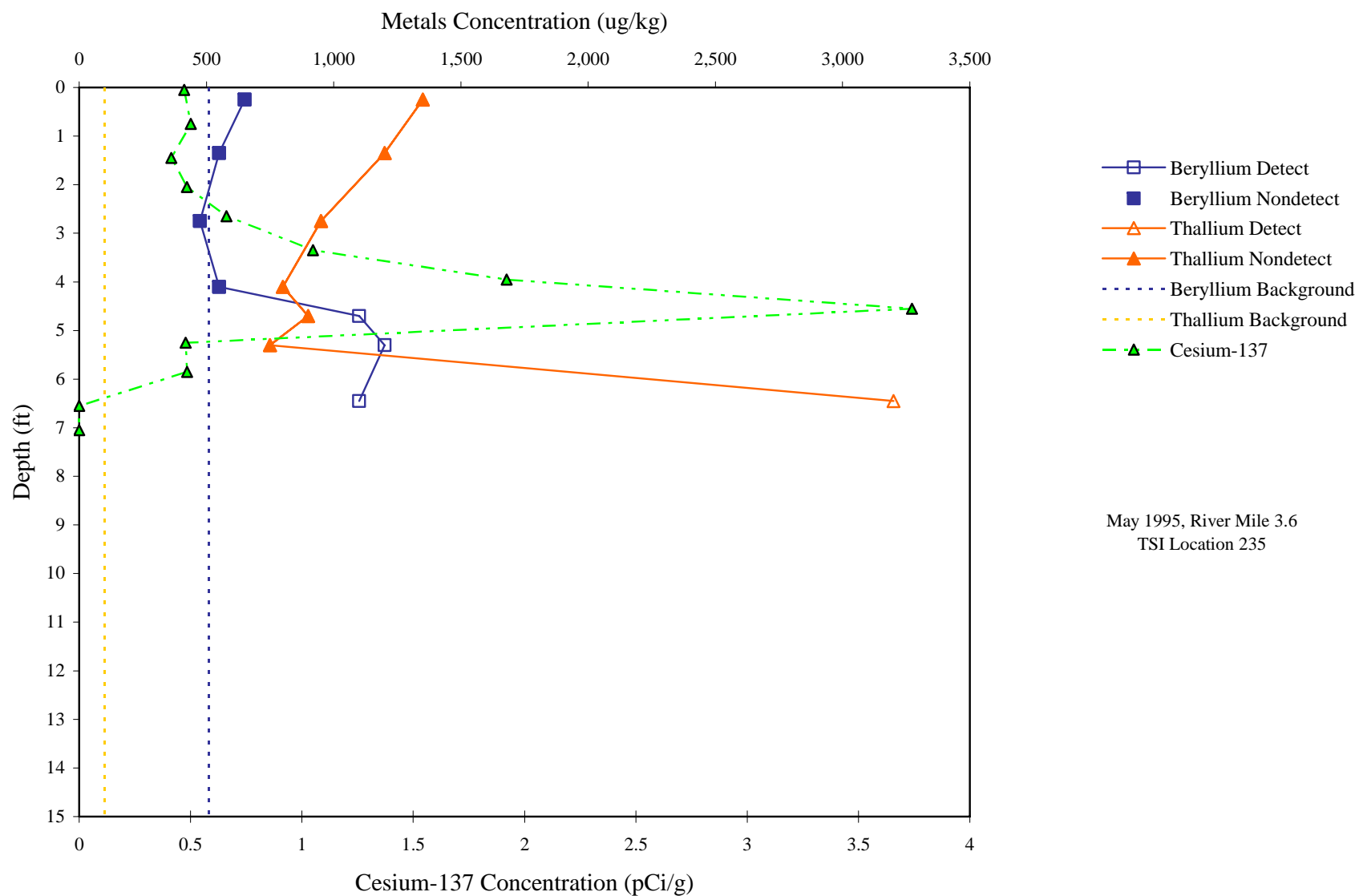


Beryllium and Thallium Downcore Profile  
(RM 3.3, TSI Location 286)

*Lower Passaic River Restoration Project*

Figure 13-29f

September 2008



May 1995, River Mile 3.6  
TSI Location 235



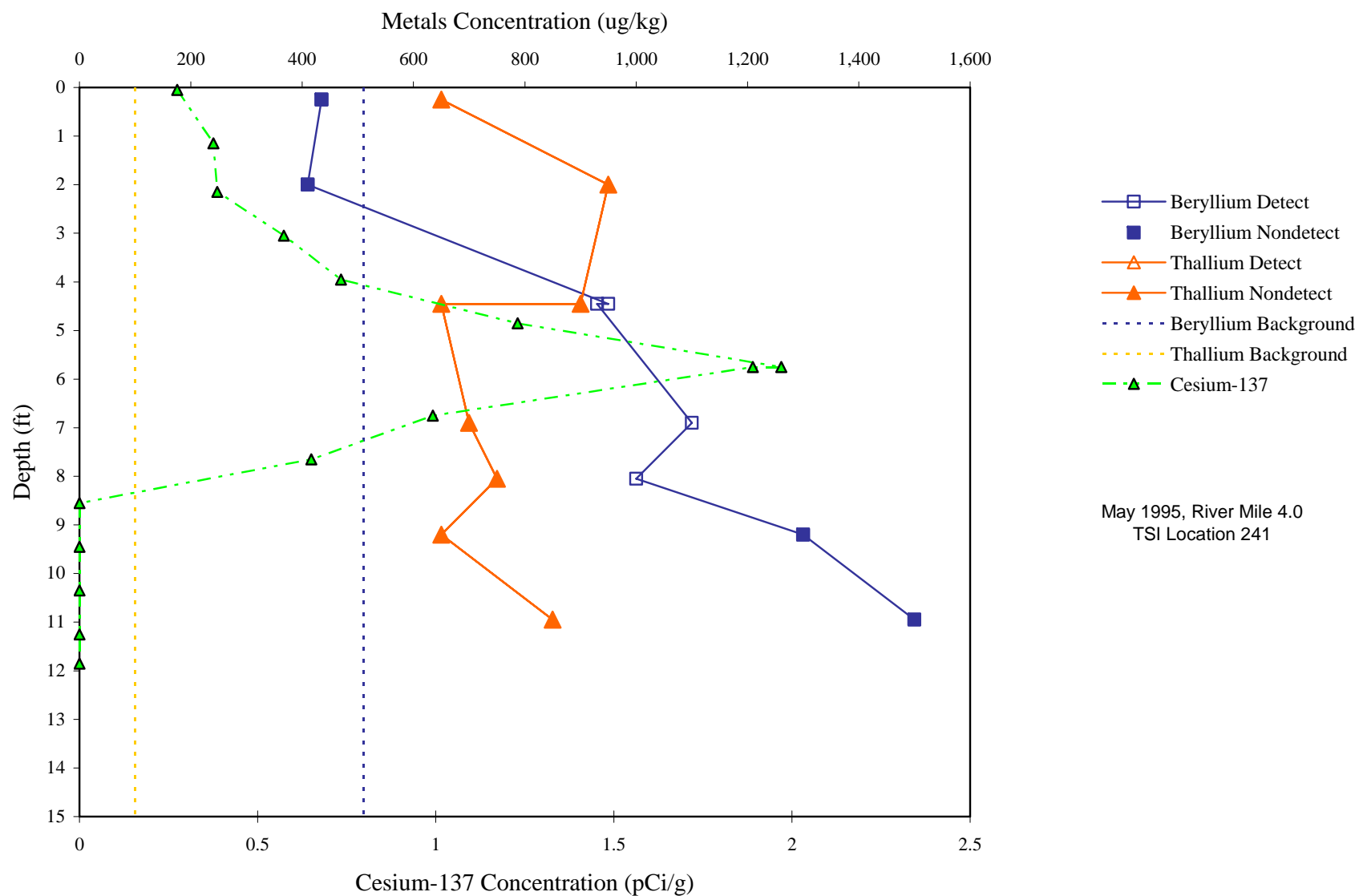
### Beryllium and Thallium Downcore Profile (RM 3.6, TSI Location 235)

Lower Passaic River Restoration Project

Figure 13-29g

September 2008





May 1995, River Mile 4.0  
TSI Location 241

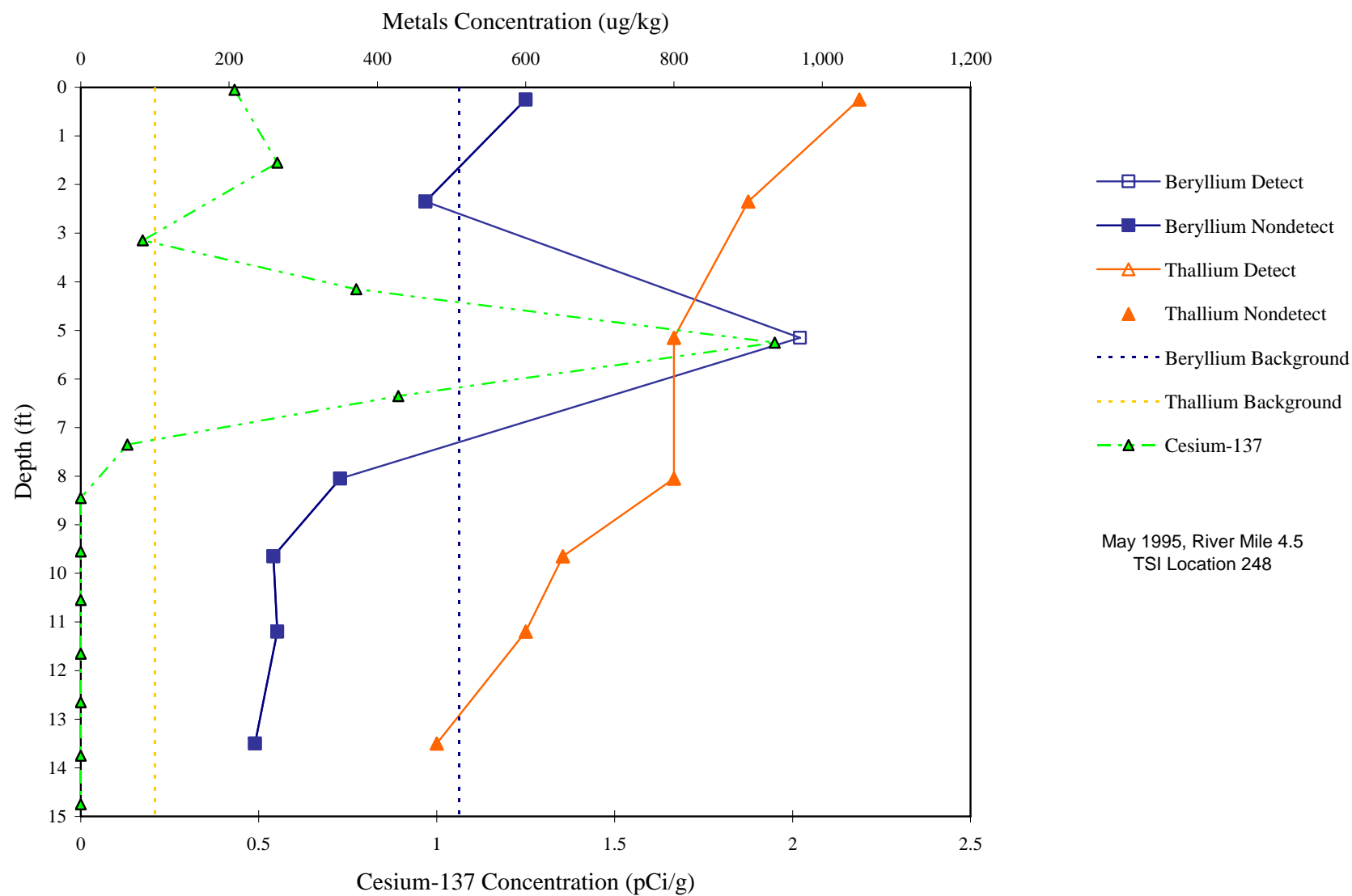


Beryllium and Thallium Downcore Profile  
(RM 4.0, TSI Location 241)

Lower Passaic River Restoration Project

Figure 13-29h

September 2008

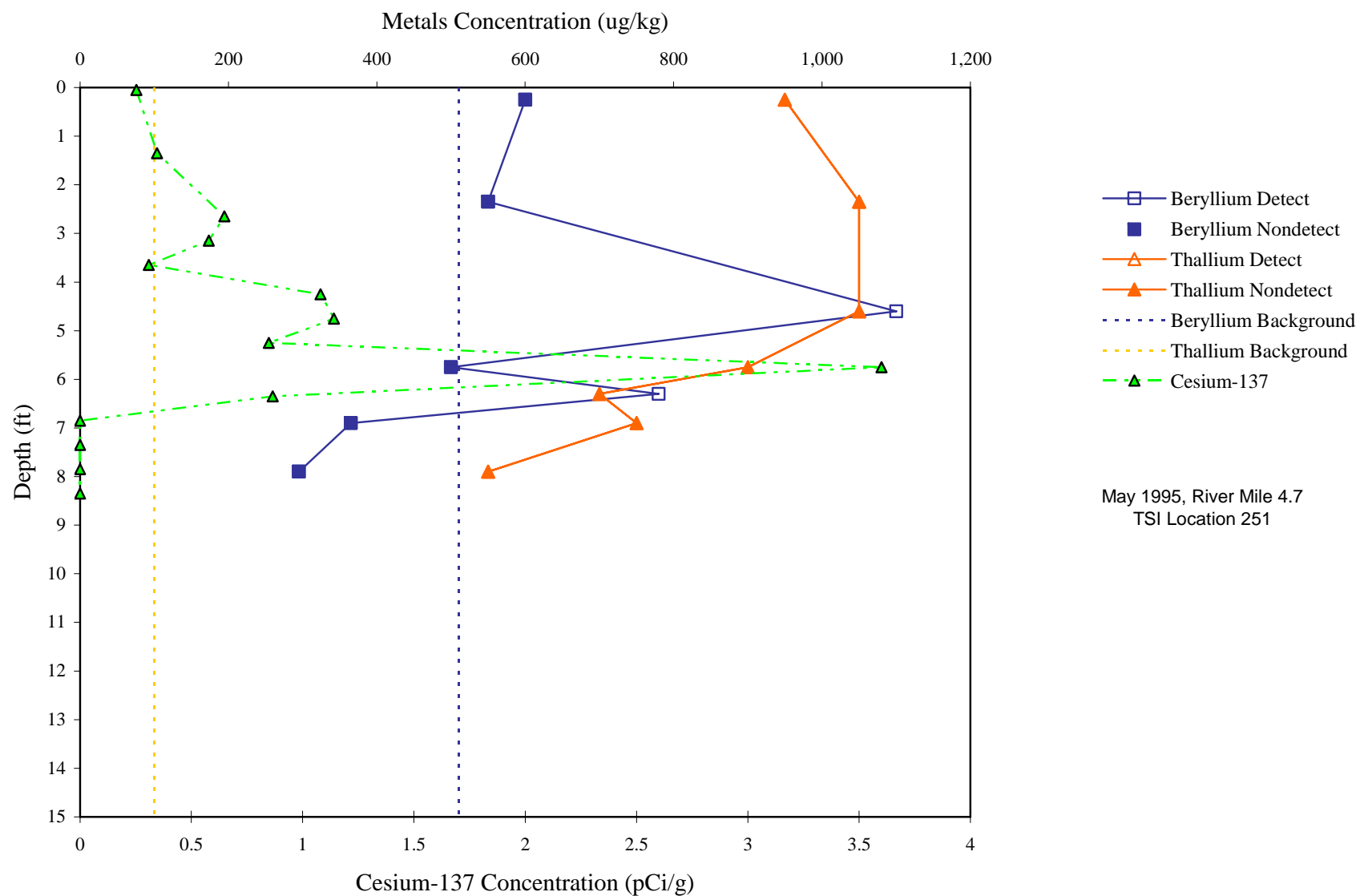


Beryllium and Thallium Downcore Profile  
(RM 4.5, TSI Location 248)

Lower Passaic River Restoration Project

Figure 13-29i

September 2008



May 1995, River Mile 4.7  
TSI Location 251

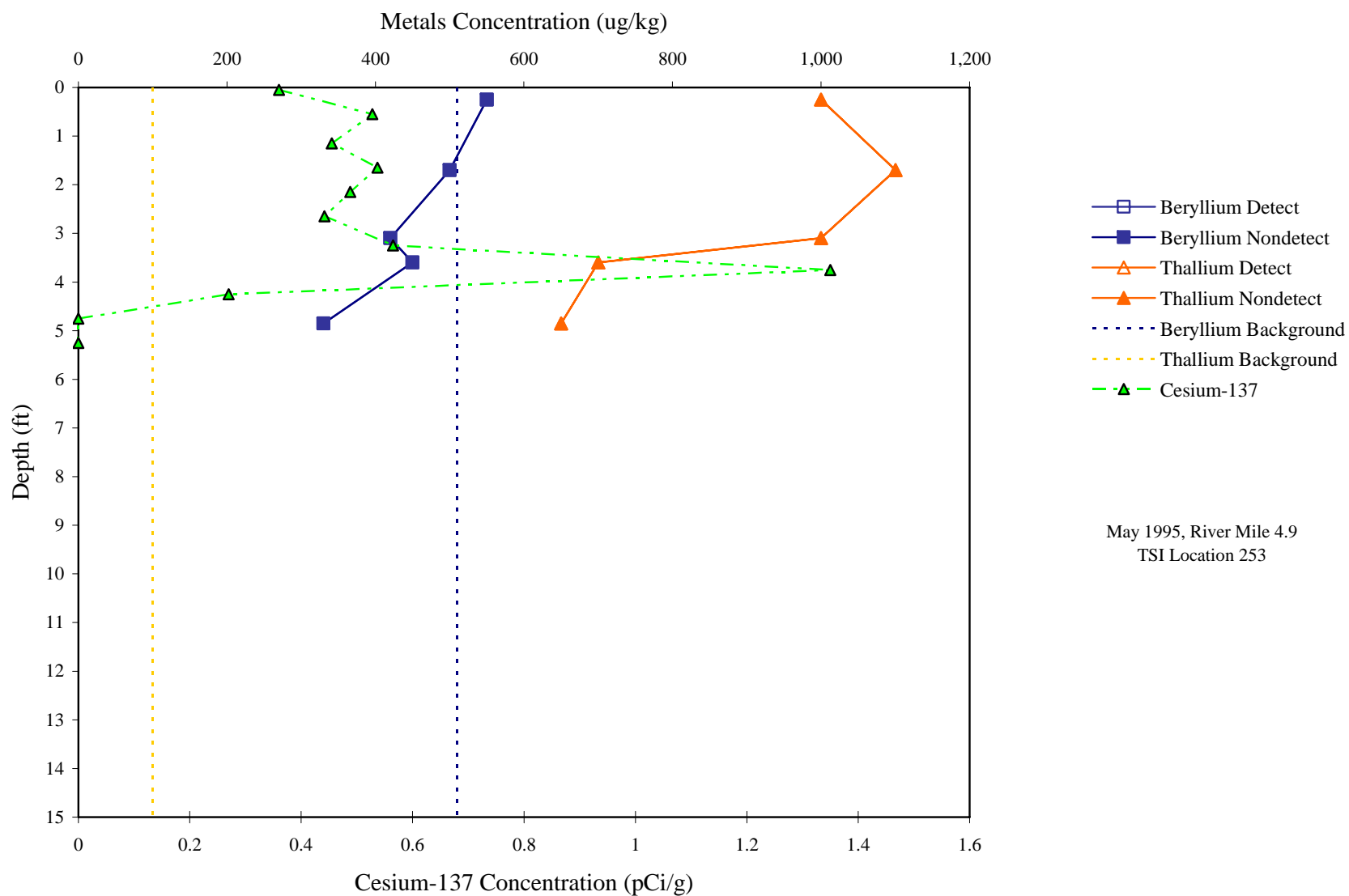


Beryllium and Thallium Downcore Profile  
(RM 4.7, TSI Location 251)

Lower Passaic River Restoration Project

Figure 13-29j

September 2008

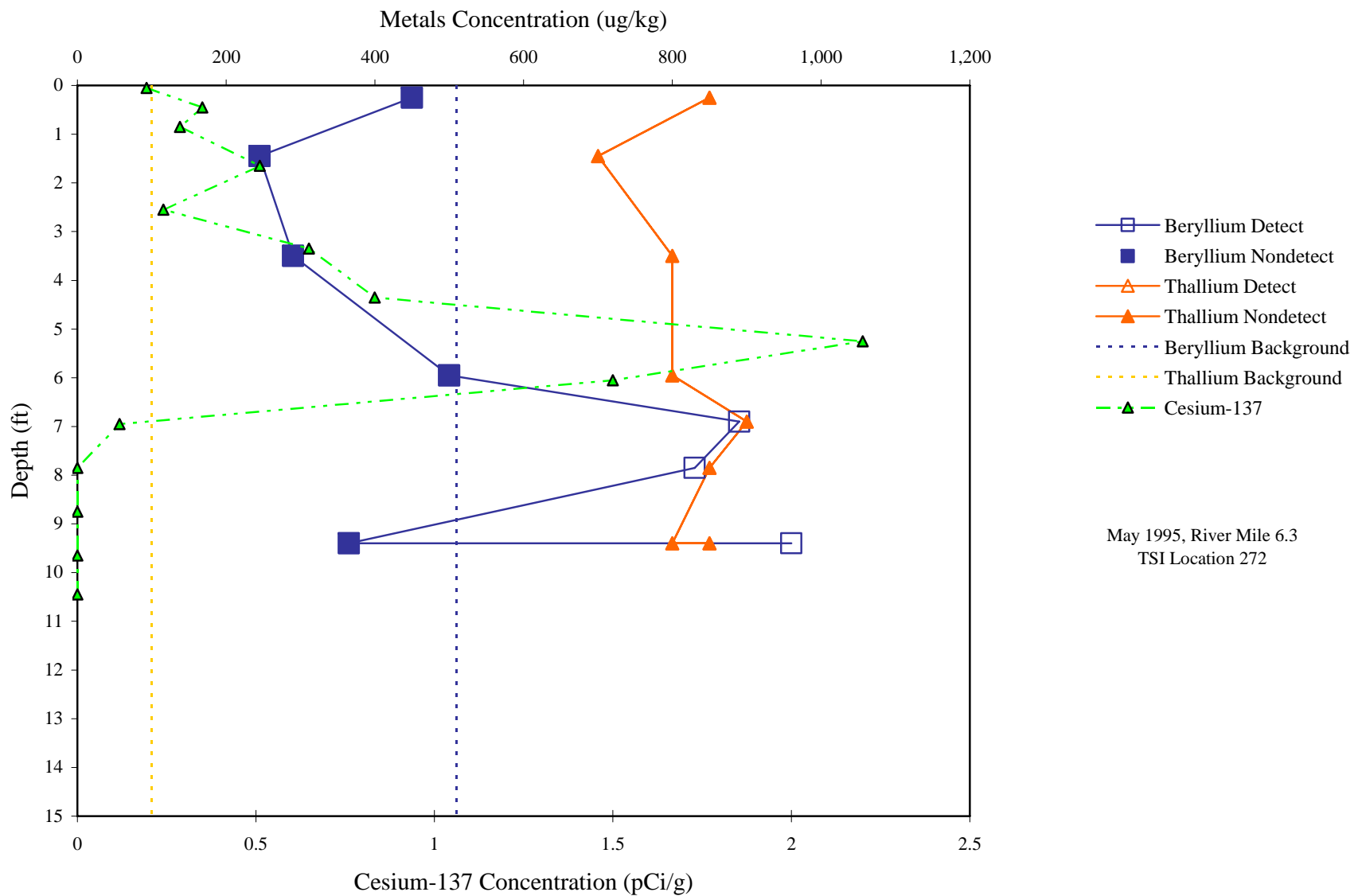


Beryllium and Thallium Downcore Profile  
(RM 4.9, TSI Location 253)

*Lower Passaic River Restoration Project*

Figure 13-29k

September 2008



May 1995, River Mile 6.3  
TSI Location 272

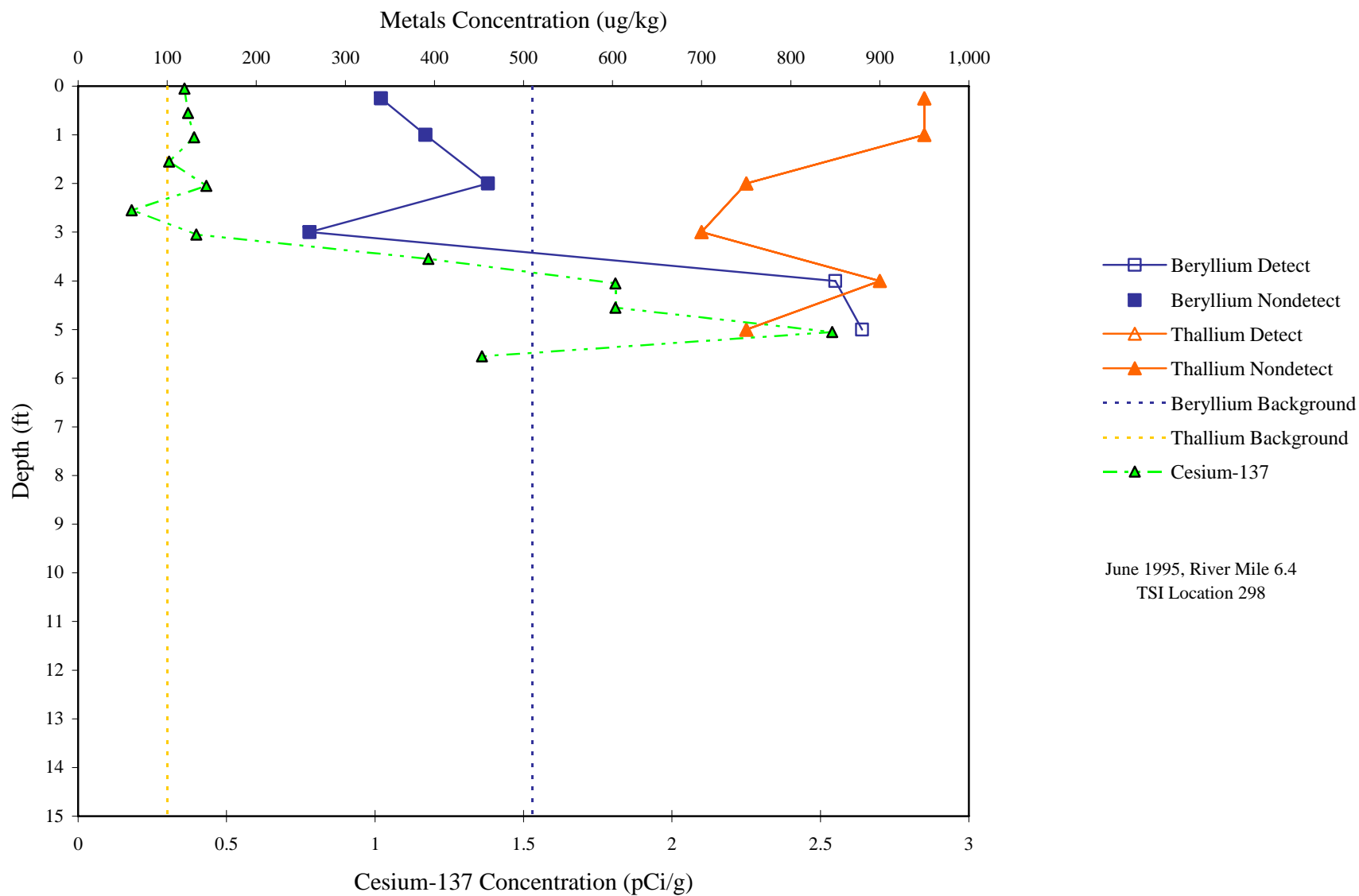


Beryllium and Thallium Downcore Profile  
(RM 6.3, TSI Location 272)

Lower Passaic River Restoration Project

Figure 13-29I

September 2008

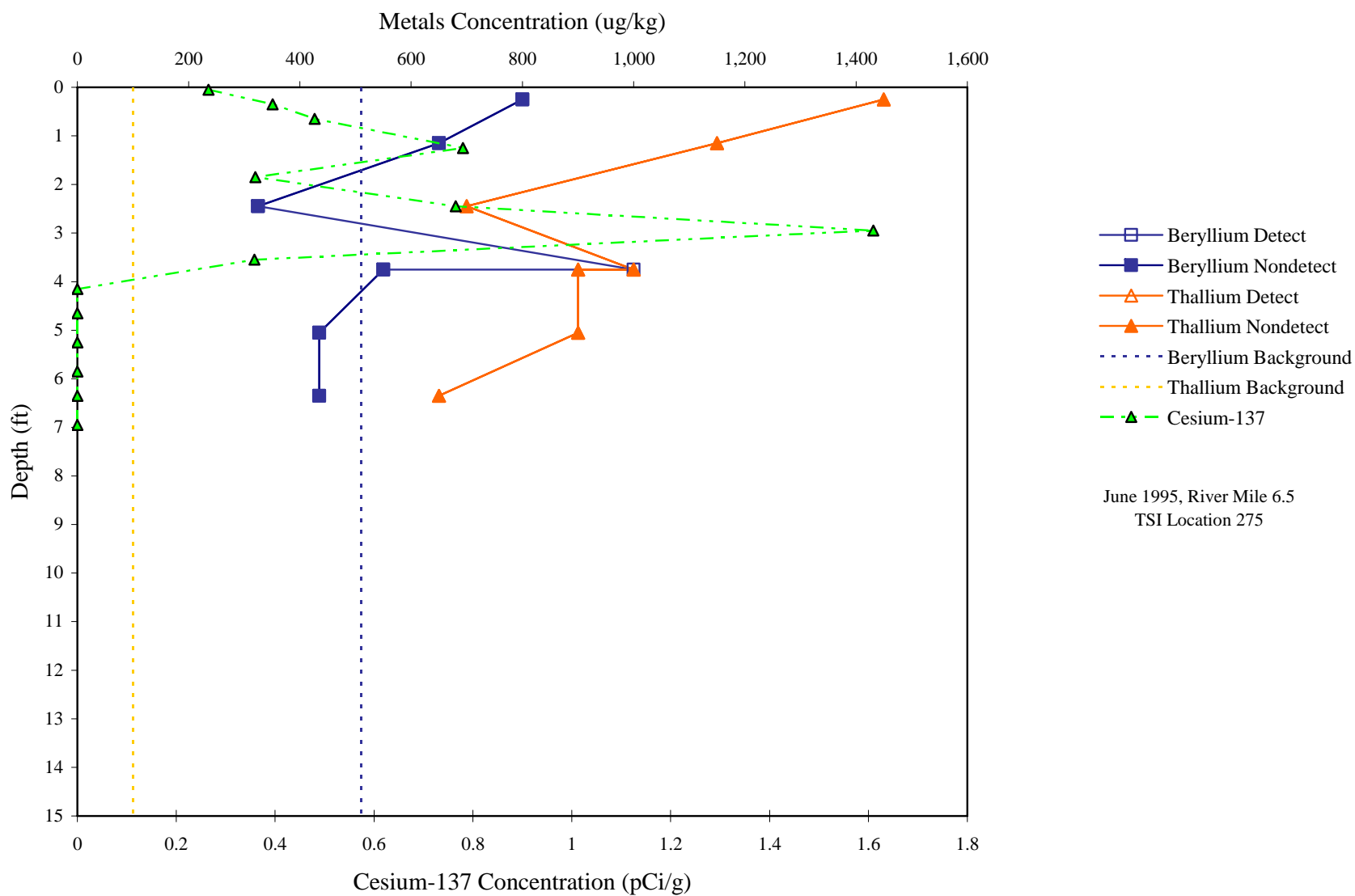


Beryllium and Thallium Downcore Profile  
(RM 6.4, TSI Location 298)

*Lower Passaic River Restoration Project*

Figure 13-29m

September 2008



June 1995, River Mile 6.5  
TSI Location 275

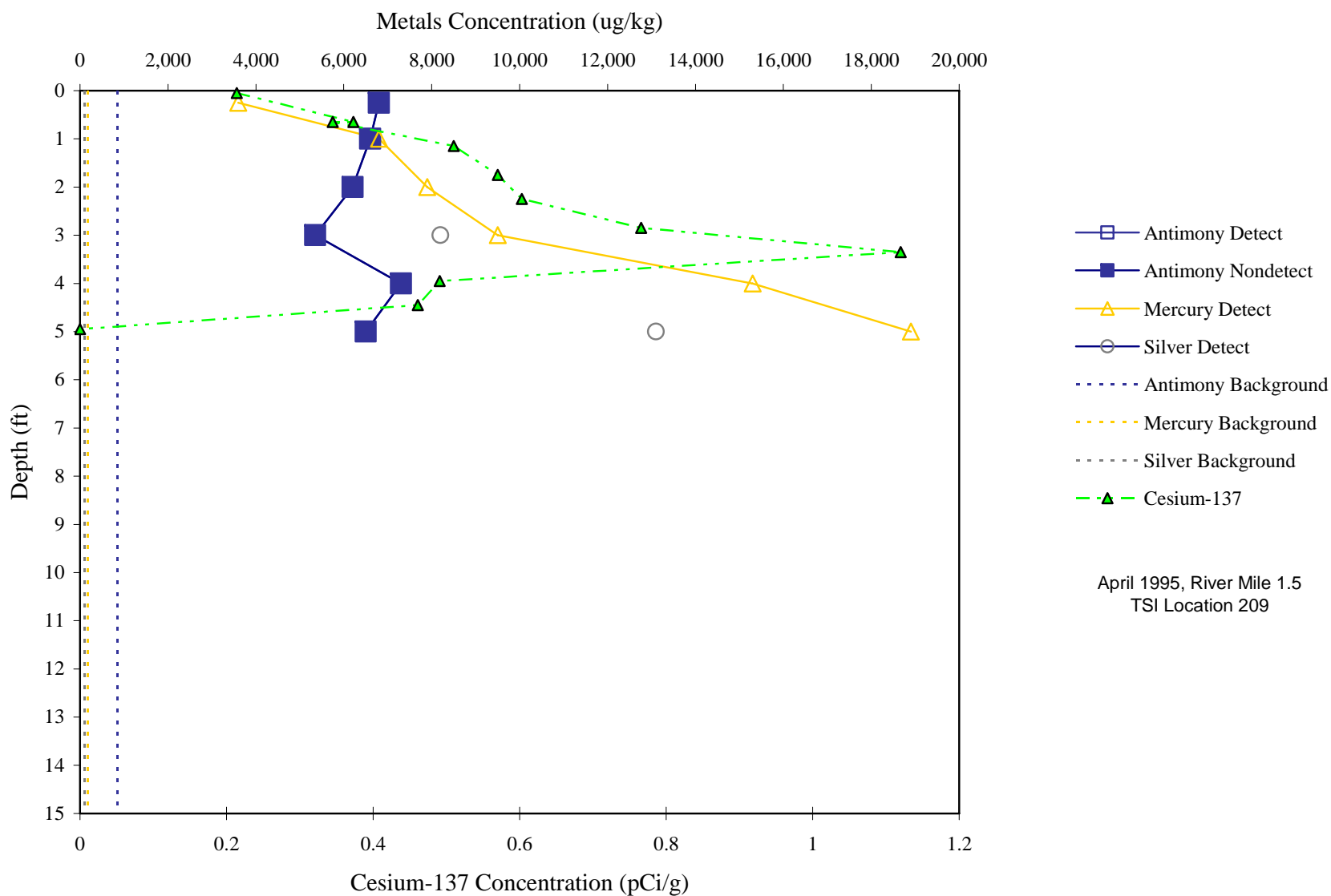


Beryllium and Thallium Downcore Profile  
(RM 6.5, TSI Location 275)

Lower Passaic River Restoration Project

Figure 13-29n

September 2008



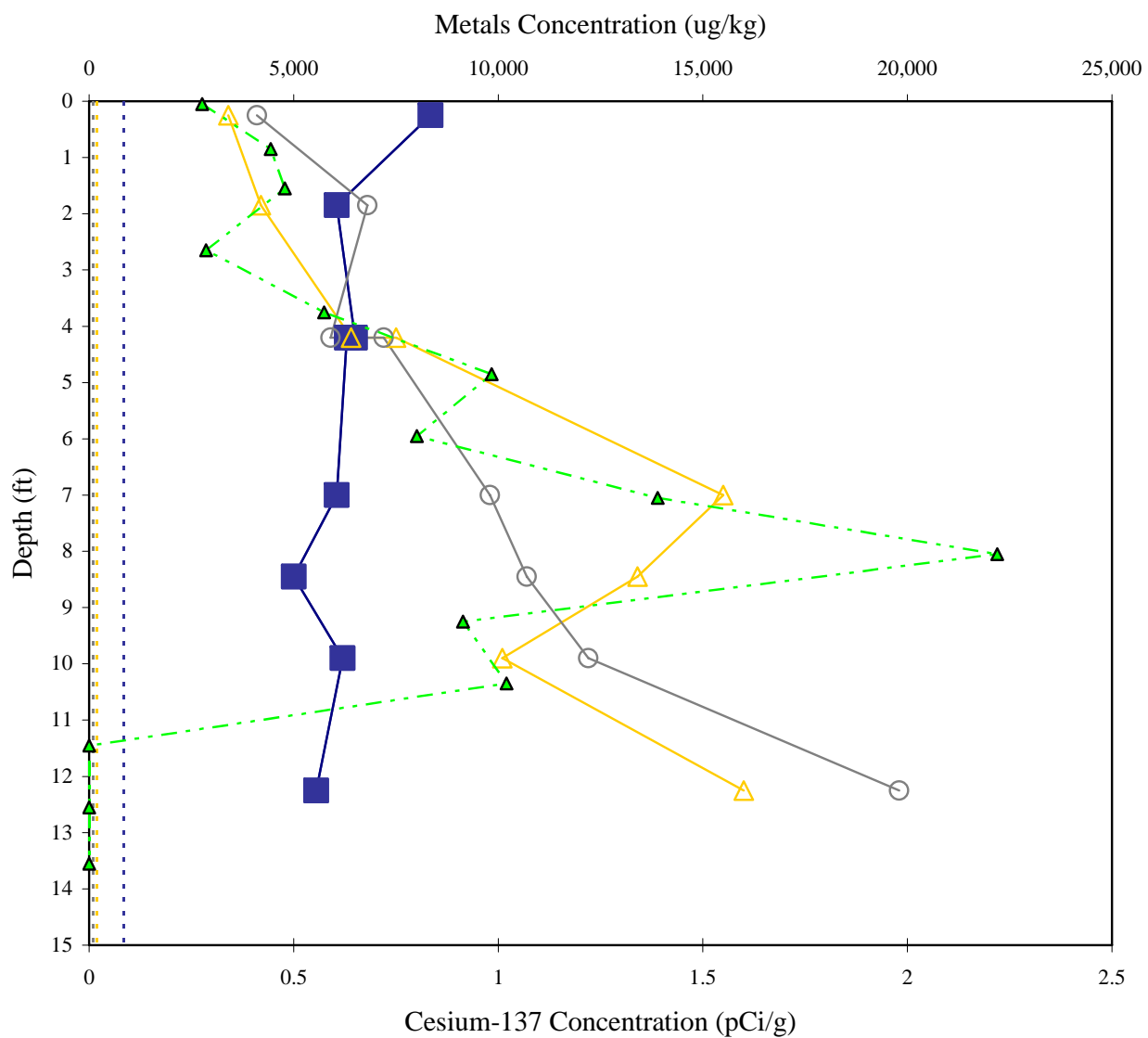
Antimony, Mercury and Silver Downcore Profile  
(RM 1.5, TSI Location 209)

Lower Passaic River Restoration Project

Figure 13-30a

September 2008



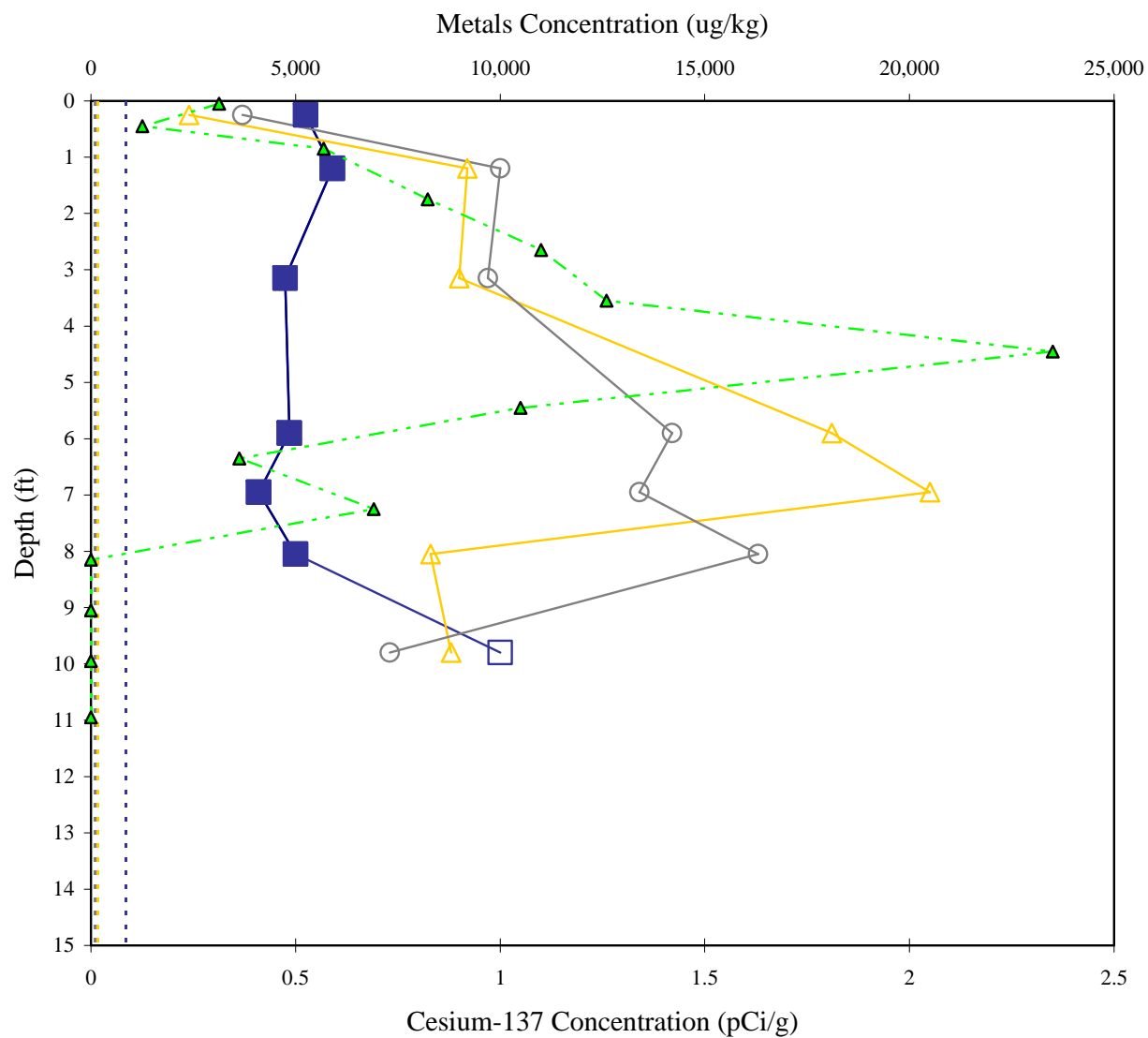


Antimony, Mercury and Silver Downcore Profile  
(RM 2.7, TSI Location 222)

Lower Passaic River Restoration Project

Figure 13-30b

September 2008



May 1995, River Mile 3.1  
TSI Location 228

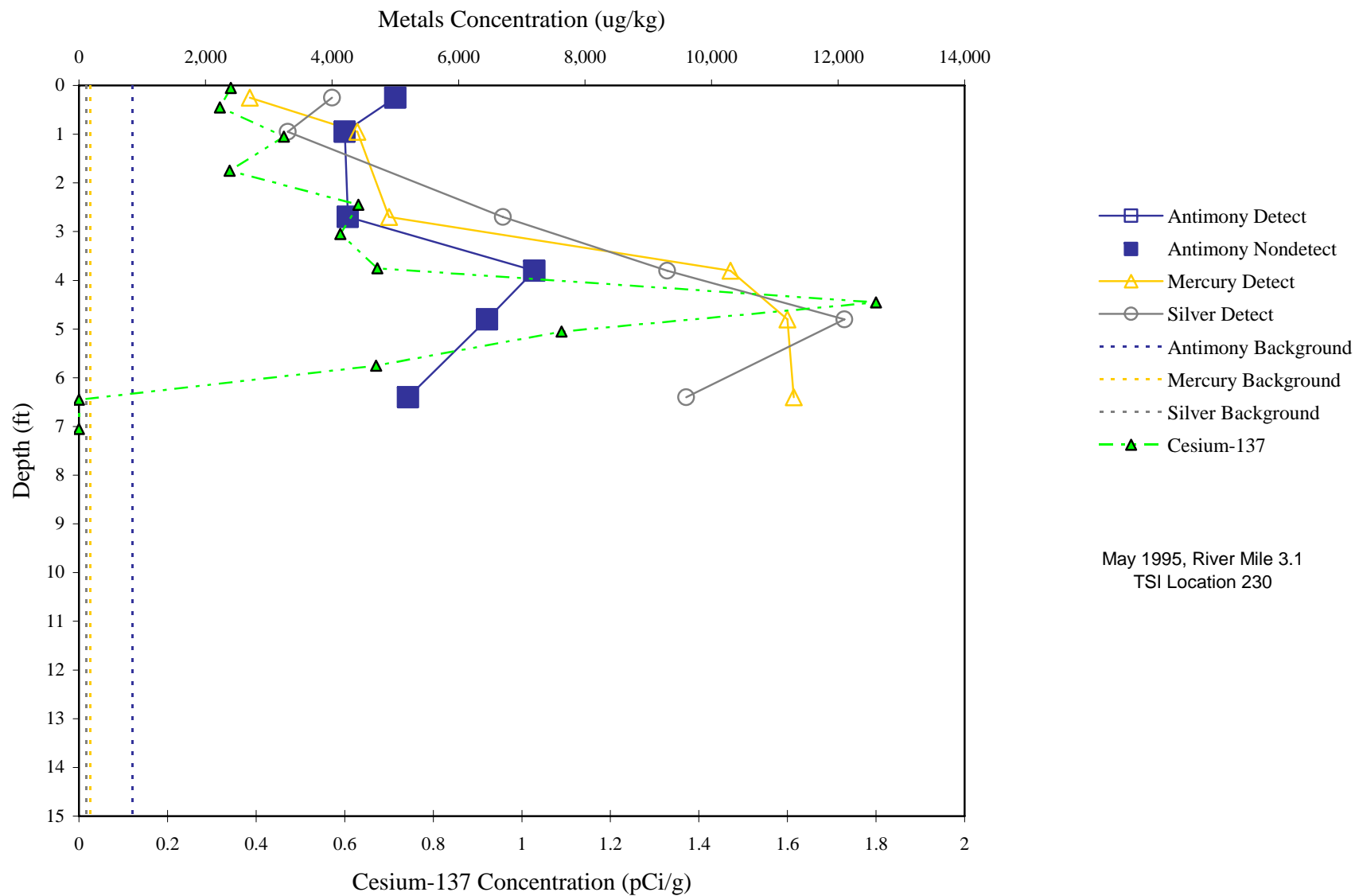


Antimony, Mercury and Silver Downcore Profile  
(RM 3.1, TSI Location 228)

*Lower Passaic River Restoration Project*

Figure 13-30c

September 2008

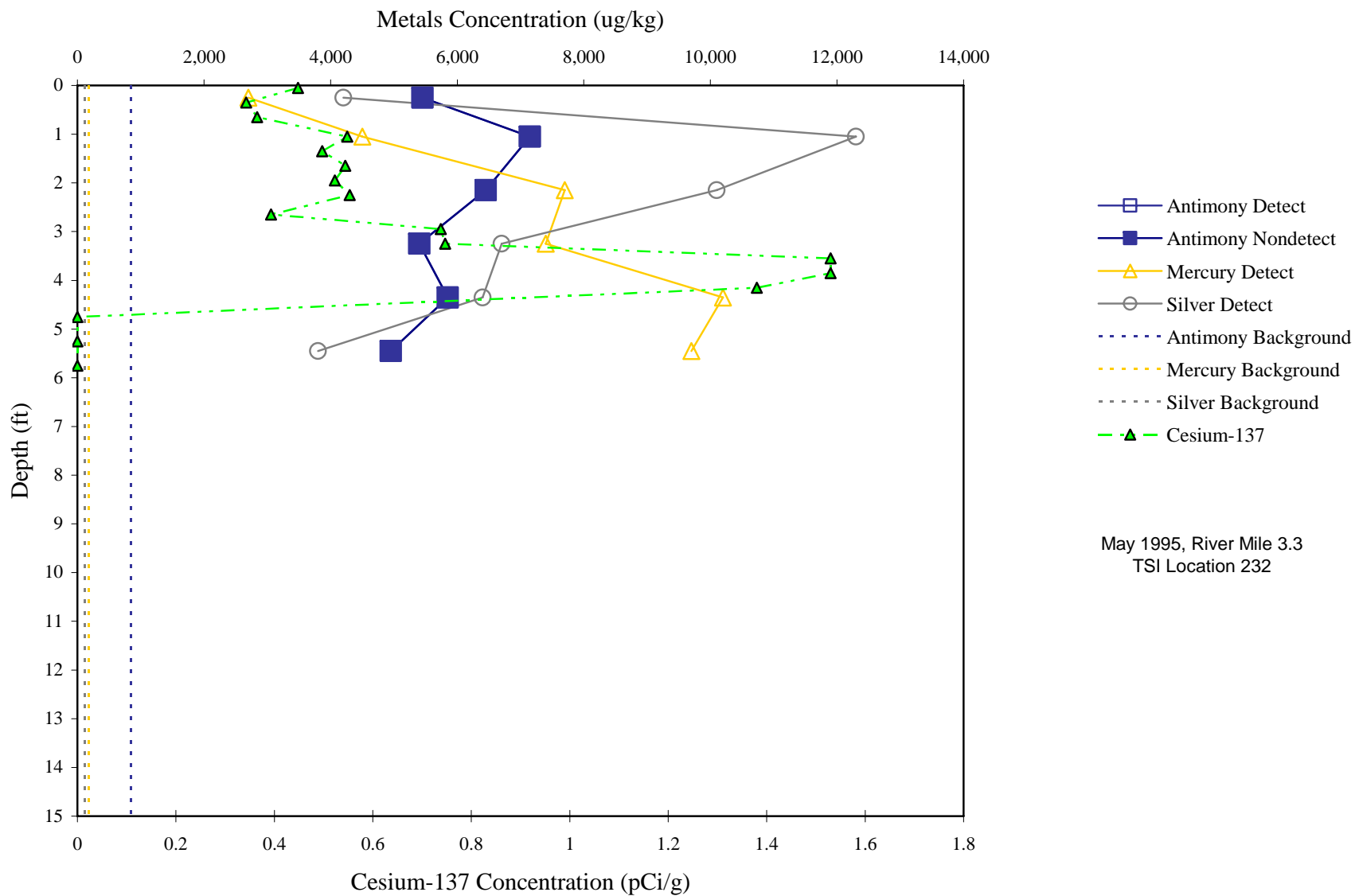


Antimony, Mercury and Silver Downcore Profile  
(RM 3.1, TSI Location 230)

*Lower Passaic River Restoration Project*

Figure 13-30d

September 2008

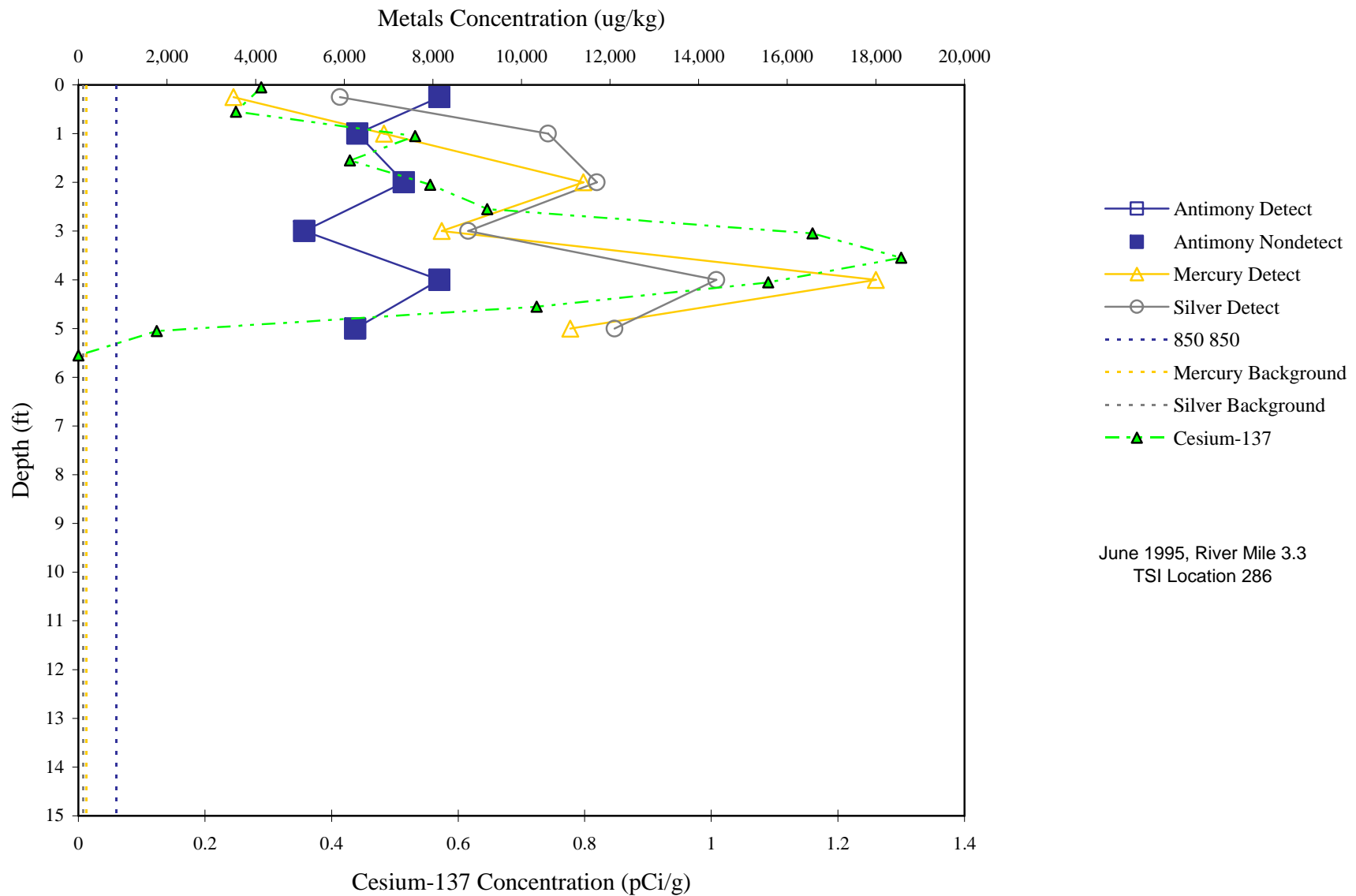


Antimony, Mercury and Silver Downcore Profile  
(RM 3.3, TSI Location 232)

*Lower Passaic River Restoration Project*

Figure 13-30e

September 2008

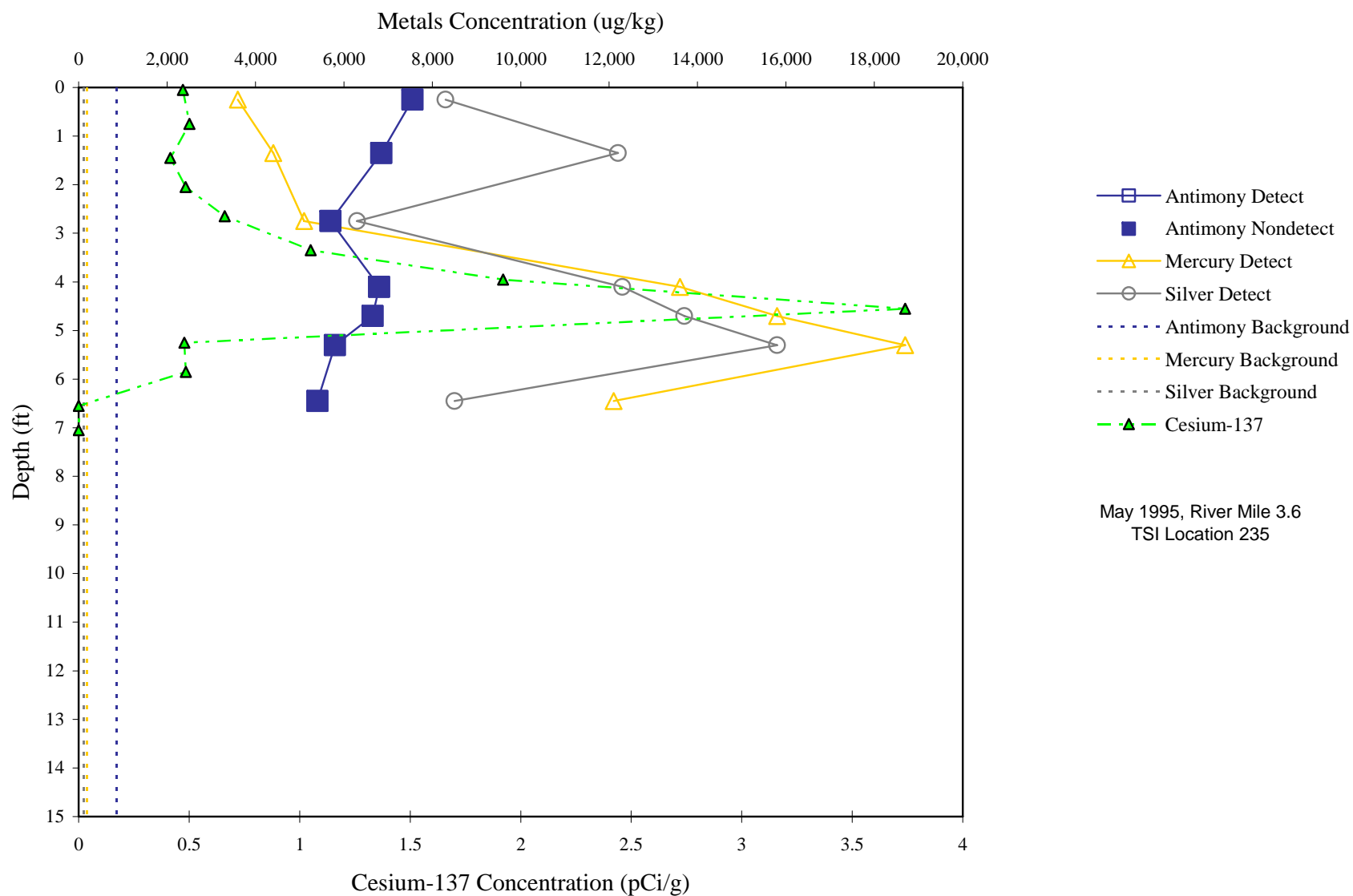


Antimony, Mercury and Silver Downcore Profile  
(RM 3.3, TSI Location 286)

Lower Passaic River Restoration Project

Figure 13-30f

September 2008

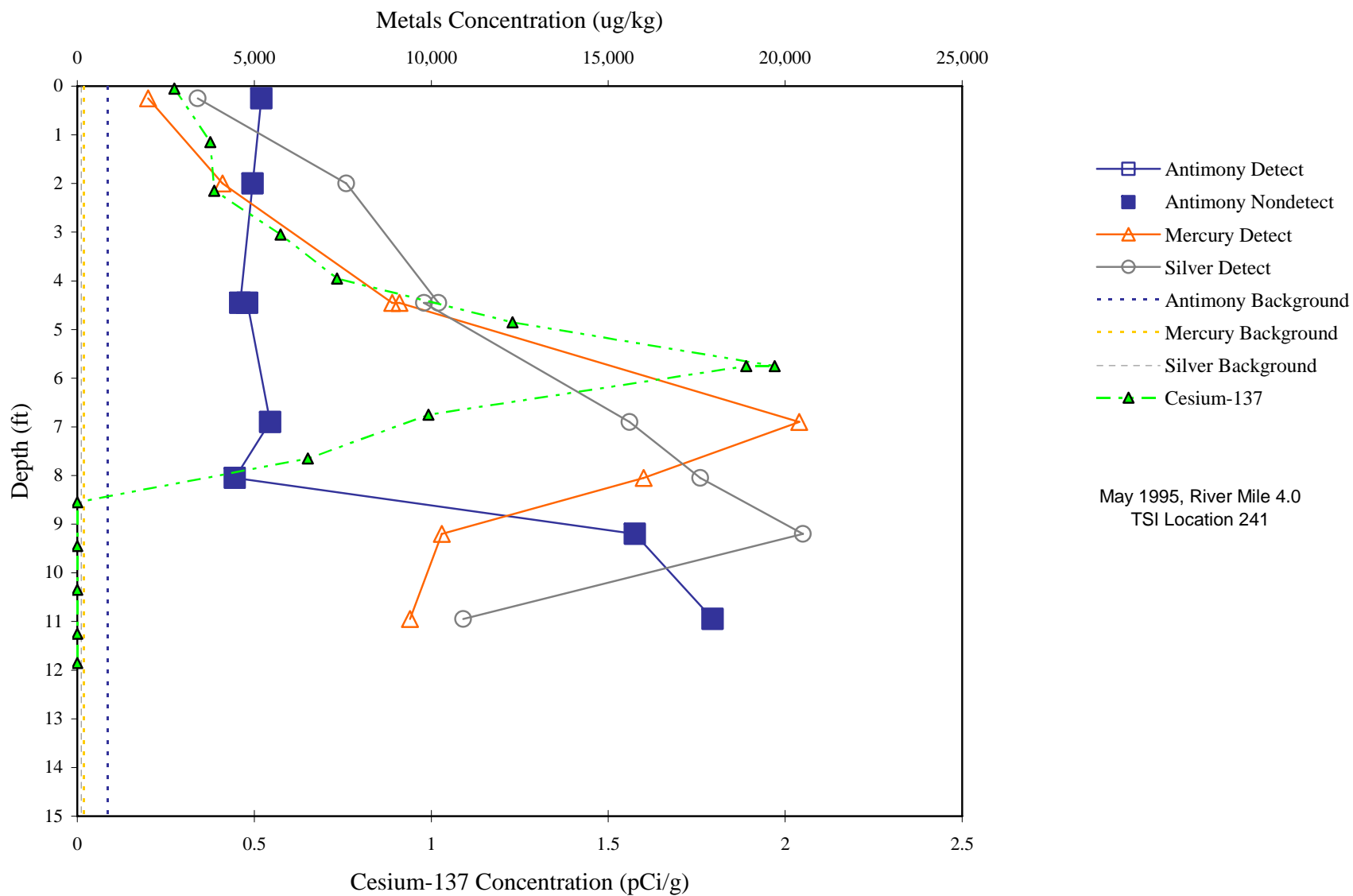


Antimony, Mercury and Silver Downcore Profile  
(RM 3.6, TSI Location 235)

Lower Passaic River Restoration Project

Figure 13-30g

September 2008

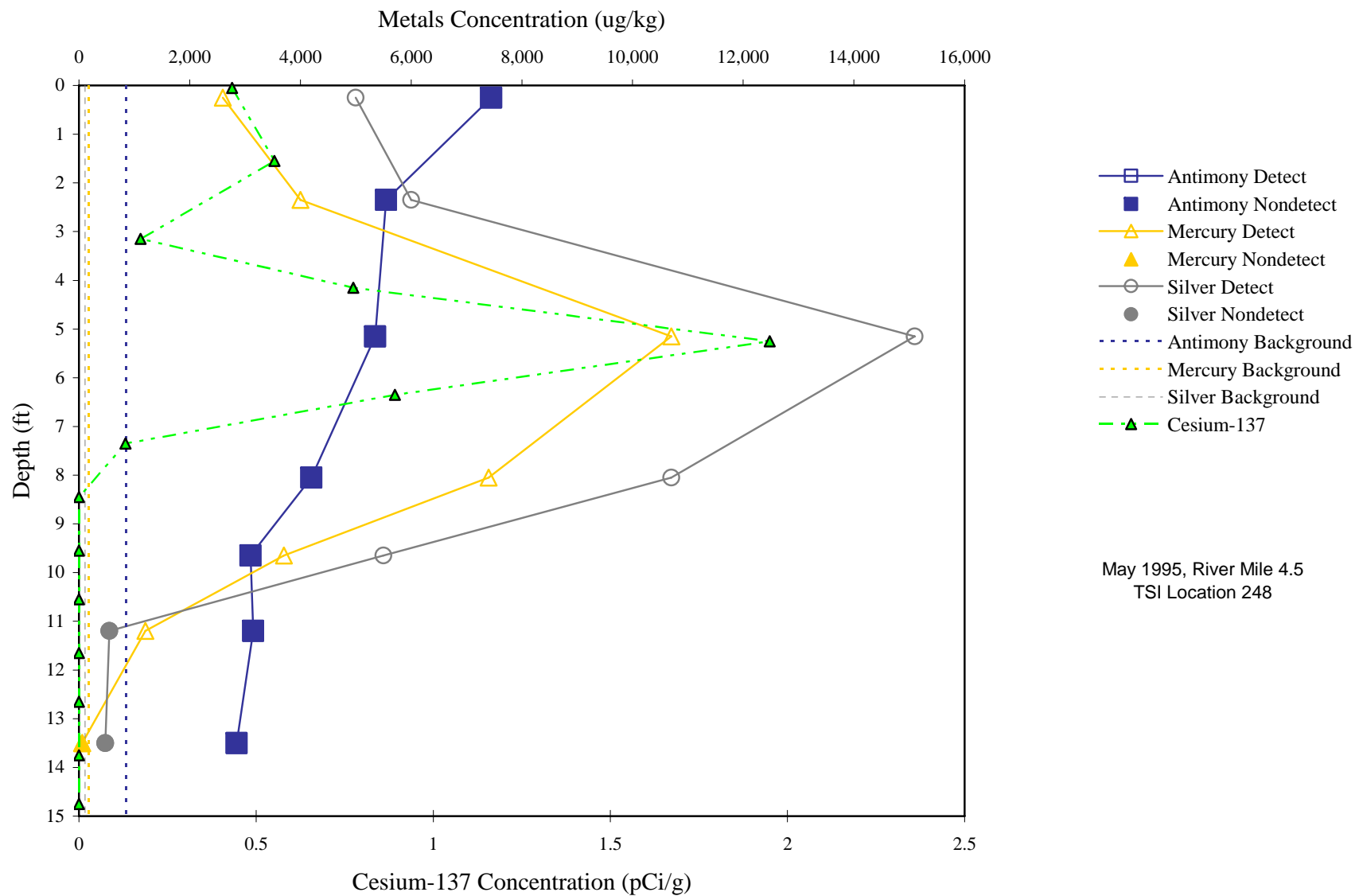


Antimony, Mercury and Silver Downcore Profile  
(RM 4.0, TSI Location 241)

*Lower Passaic River Restoration Project*

Figure 13-30h

September 2008



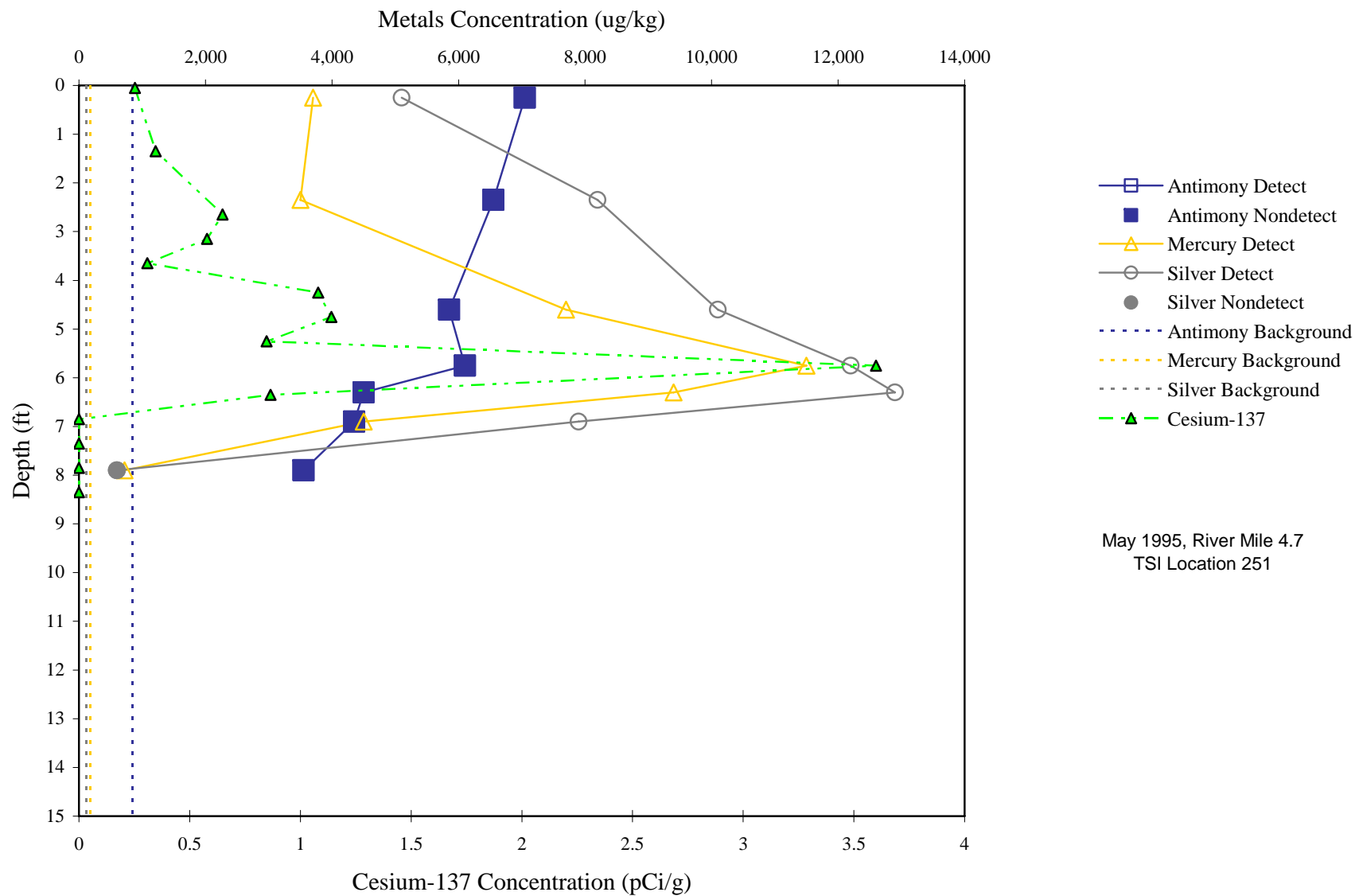
Antimony, Mercury and Silver Downcore Profile  
(RM 4.5, TSI Location 248)

*Lower Passaic River Restoration Project*

Figure 13-30i

September 2008



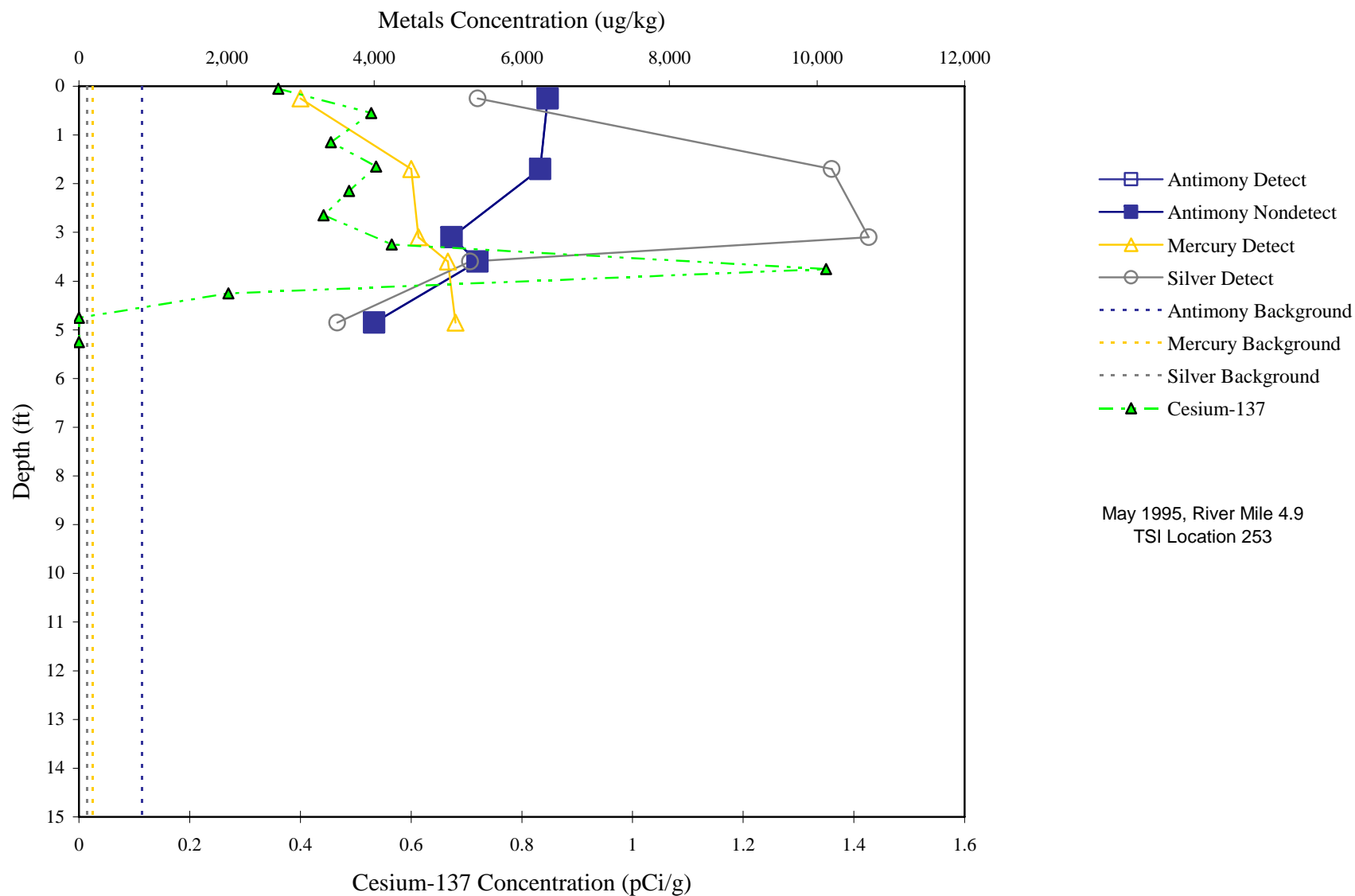


Antimony, Mercury and Silver Downcore Profile  
(RM 4.7, TSI Location 251)

Lower Passaic River Restoration Project

Figure 13-30j

September 2008

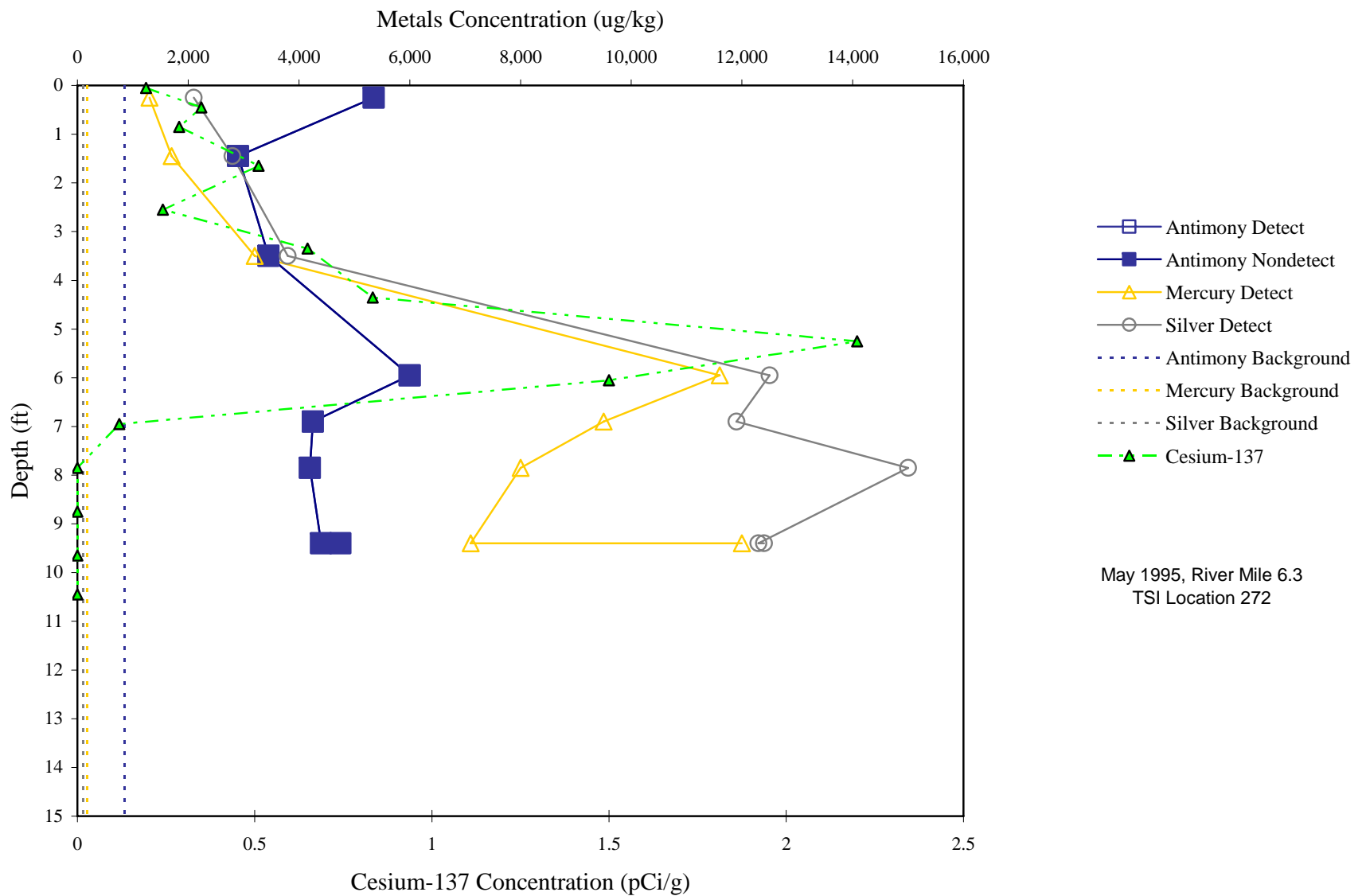


Antimony, Mercury and Silver Downcore Profile  
(RM 4.9, TSI Location 253)

Lower Passaic River Restoration Project

Figure 13-30k

September 2008

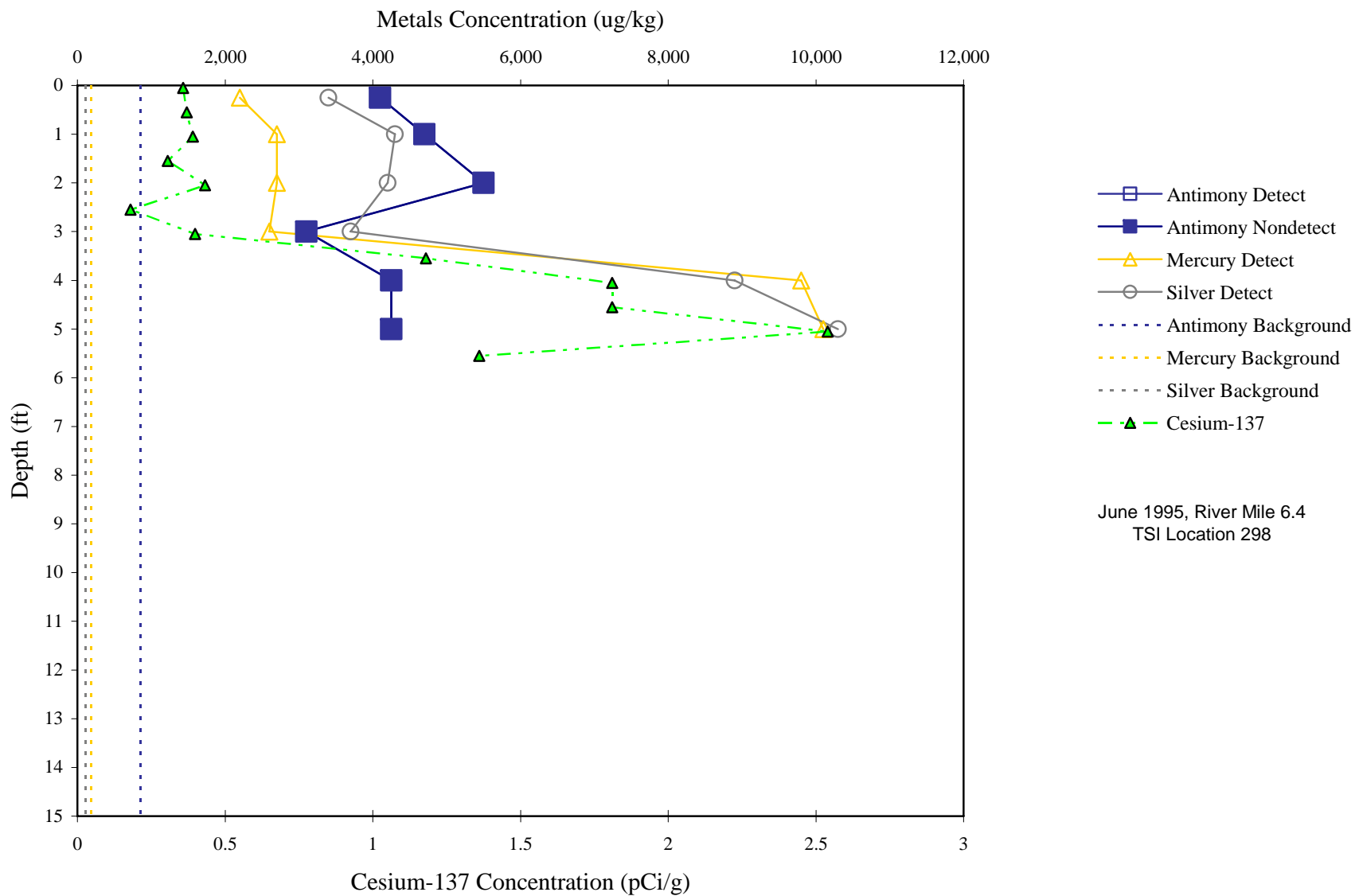


Antimony, Mercury and Silver Downcore Profile  
(RM 6.3, TSI Location 272)

Lower Passaic River Restoration Project

Figure 13-30I

September 2008

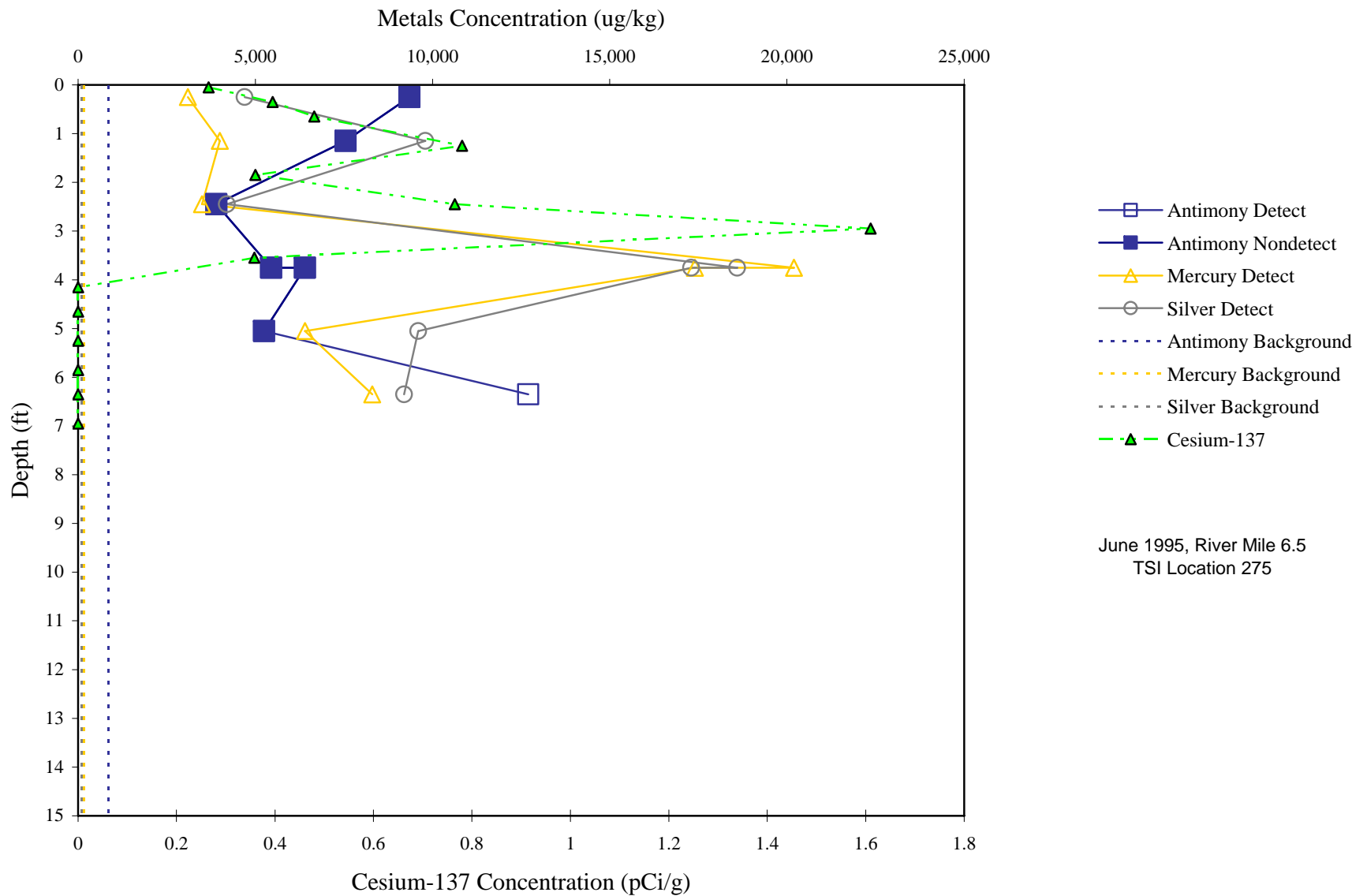


Antimony, Mercury and Silver Downcore Profile  
(RM 6.4, TSI Location 298)

*Lower Passaic River Restoration Project*

Figure 13-30m

September 2008

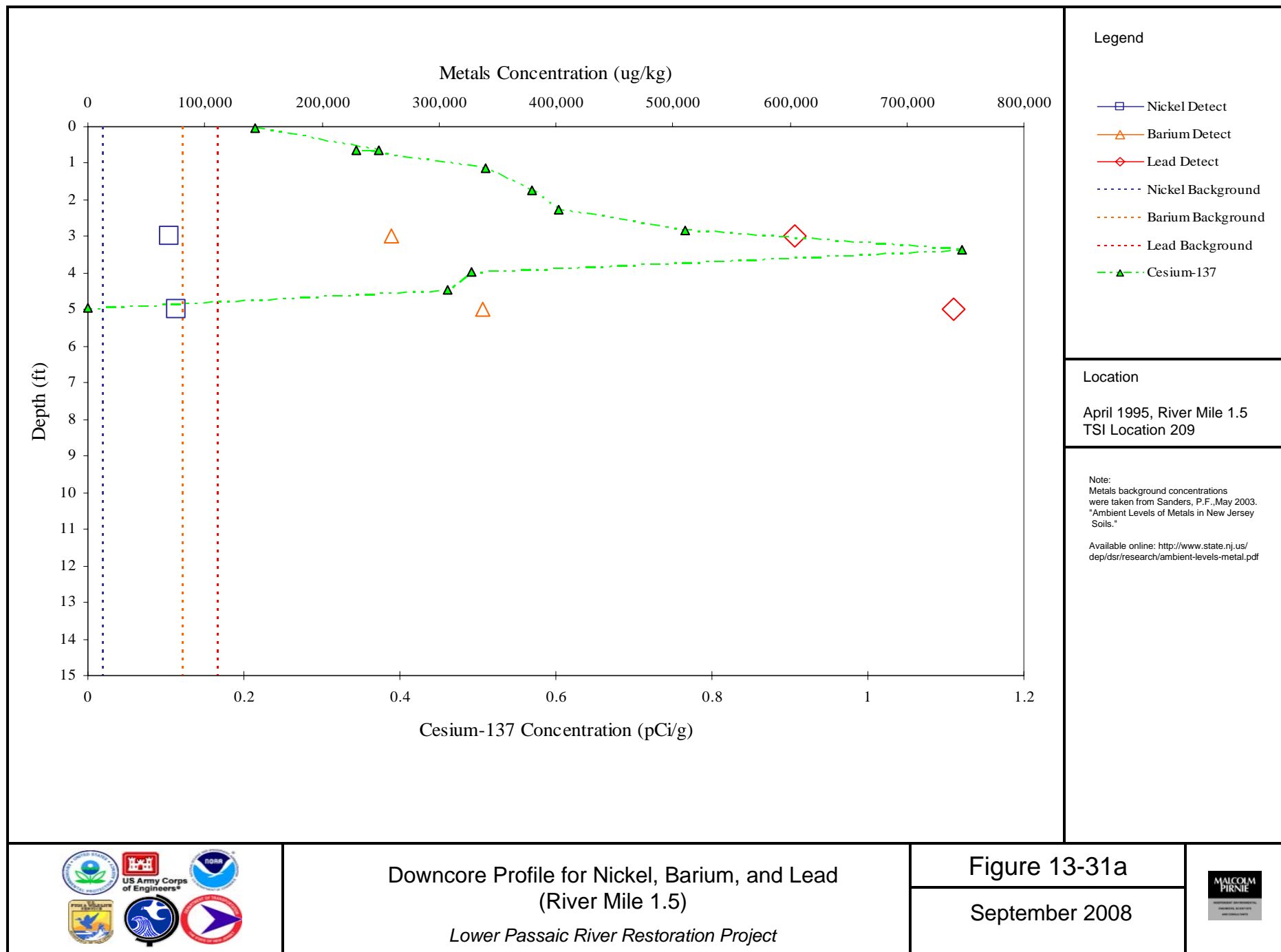


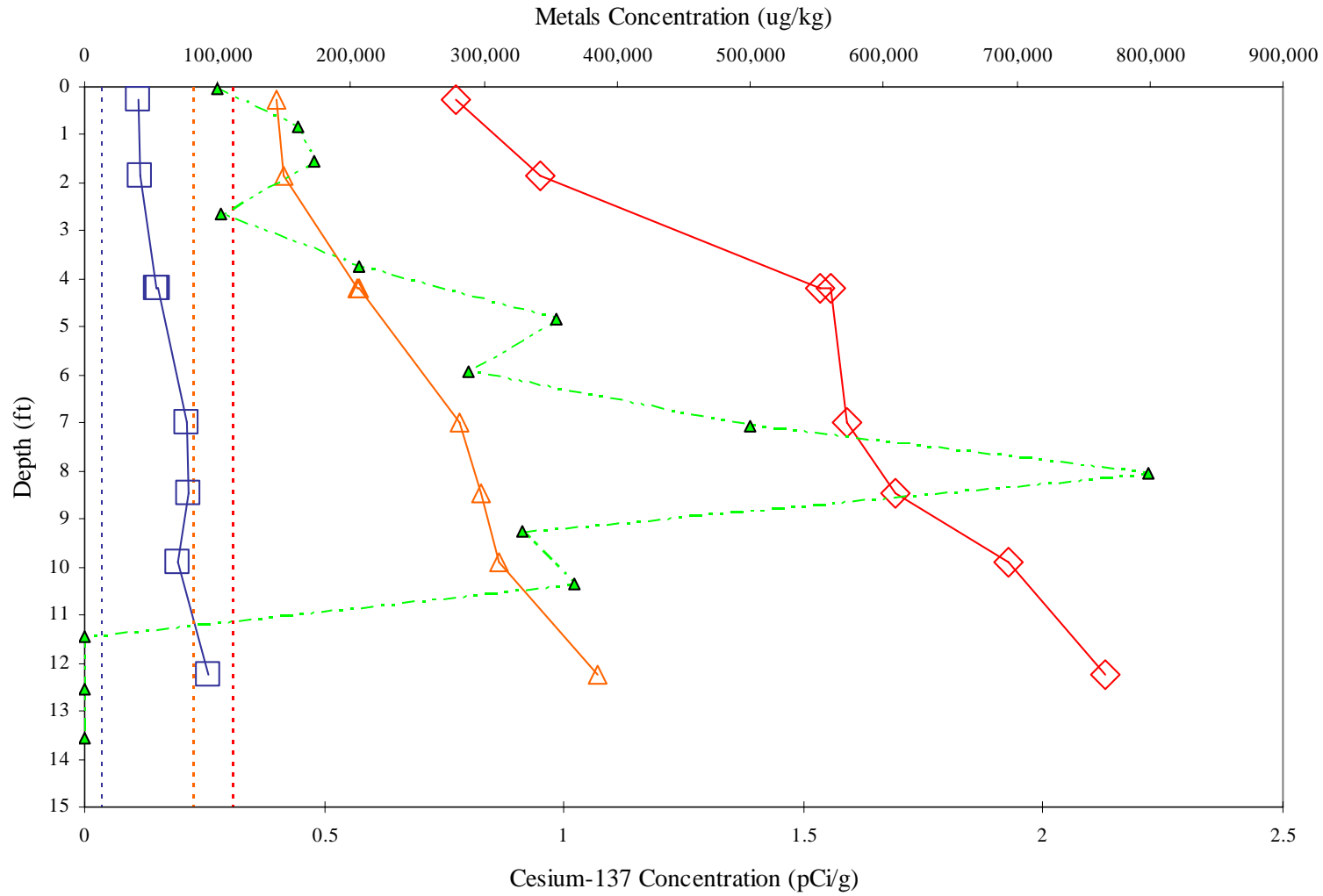
Antimony, Mercury and Silver Downcore Profile  
(RM 6.5, TSI Location 275)

*Lower Passaic River Restoration Project*

Figure 13-30n

September 2008





#### Legend

- Nickel Detect
- △— Barium Detect
- ◇— Lead Detect
- Nickel Background
- Barium Background
- Lead Background
- △--- Cesium-137

#### Location

April 1995, River Mile 2.7  
TSI Location 222

Note:  
Metals background concentrations  
were taken from Sanders, P.F., May 2003.  
"Ambient Levels of Metals in New Jersey  
Soils."

Available online: <http://www.state.nj.us/dep/dsr/research/ambient-levels-metal.pdf>



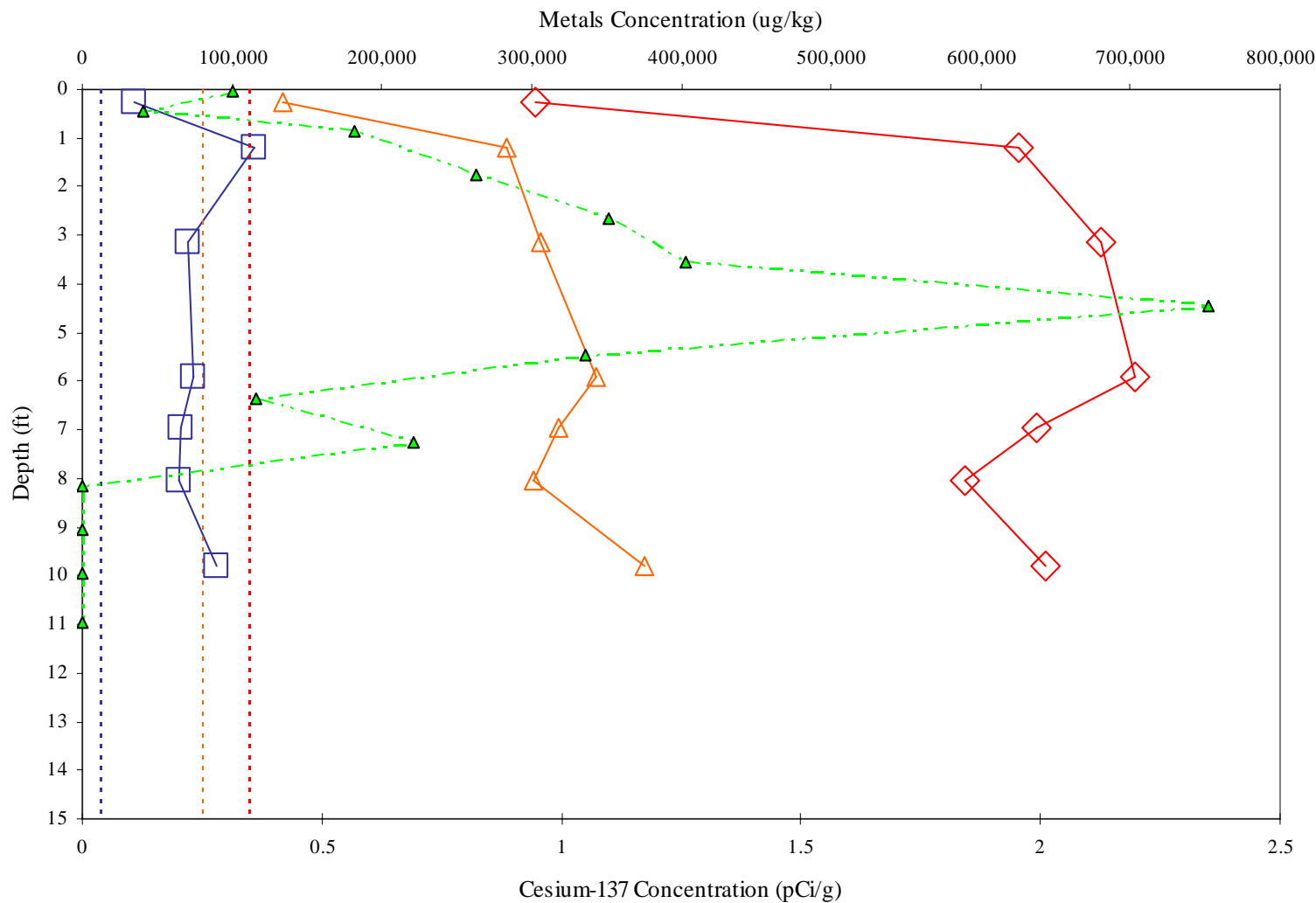
### Downcore Profile for Nickel, Barium, and Lead (River Mile 2.7)

*Lower Passaic River Restoration Project*

Figure 13-31b

September 2008





#### Legend

- Nickel Detect
- △— Barium Detect
- ◇— Lead Detect
- Nickel Background
- Barium Background
- Lead Background
- ▲--- Cesium-137

#### Location

May 1995, River Mile 3.1  
TSI Location 228

Note:  
Metals background concentrations  
were taken from Sanders, P.F., May 2003.  
"Ambient Levels of Metals in New Jersey  
Soils."

Available online: <http://www.state.nj.us/dep/dsr/research/ambient-levels-metal.pdf>



### Downcore Profile for Nickel, Barium, and Lead (River Mile 3.1)

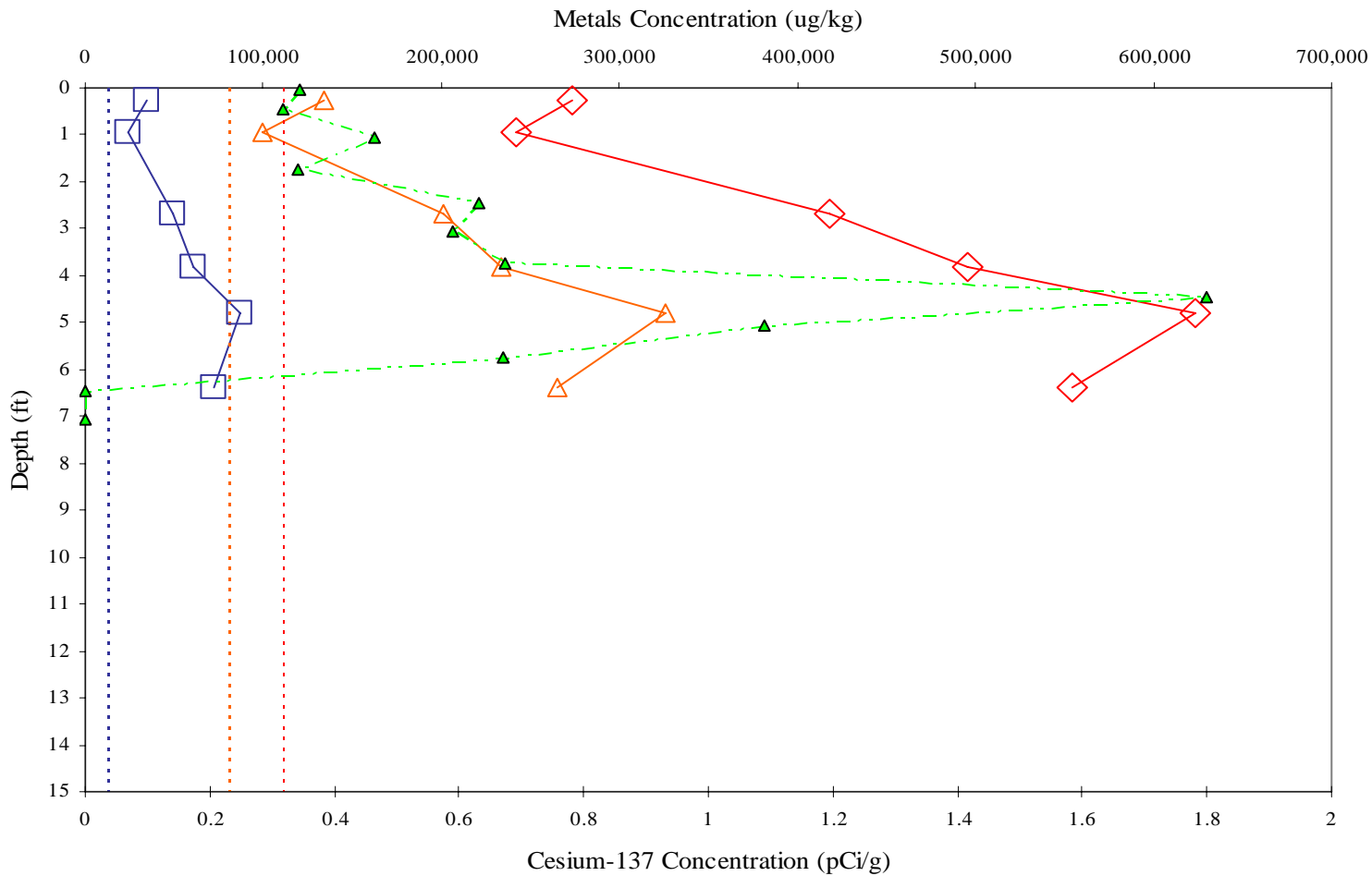
*Lower Passaic River Restoration Project*

Figure 13-31c

September 2008







#### Legend

- Nickel Detect
- △— Barium Detect
- ◇— Lead Detect
- Nickel Background
- Barium Background
- Lead Background
- ▲--- Cesium-137

#### Location

May 1995, River Mile 3.1  
TSI Location 230

Note:  
Metals background concentrations  
were taken from Sanders, P.F., May 2003.  
"Ambient Levels of Metals in New Jersey  
Soils."

Available online: <http://www.state.nj.us/dep/dsr/research/ambient-levels-metal.pdf>



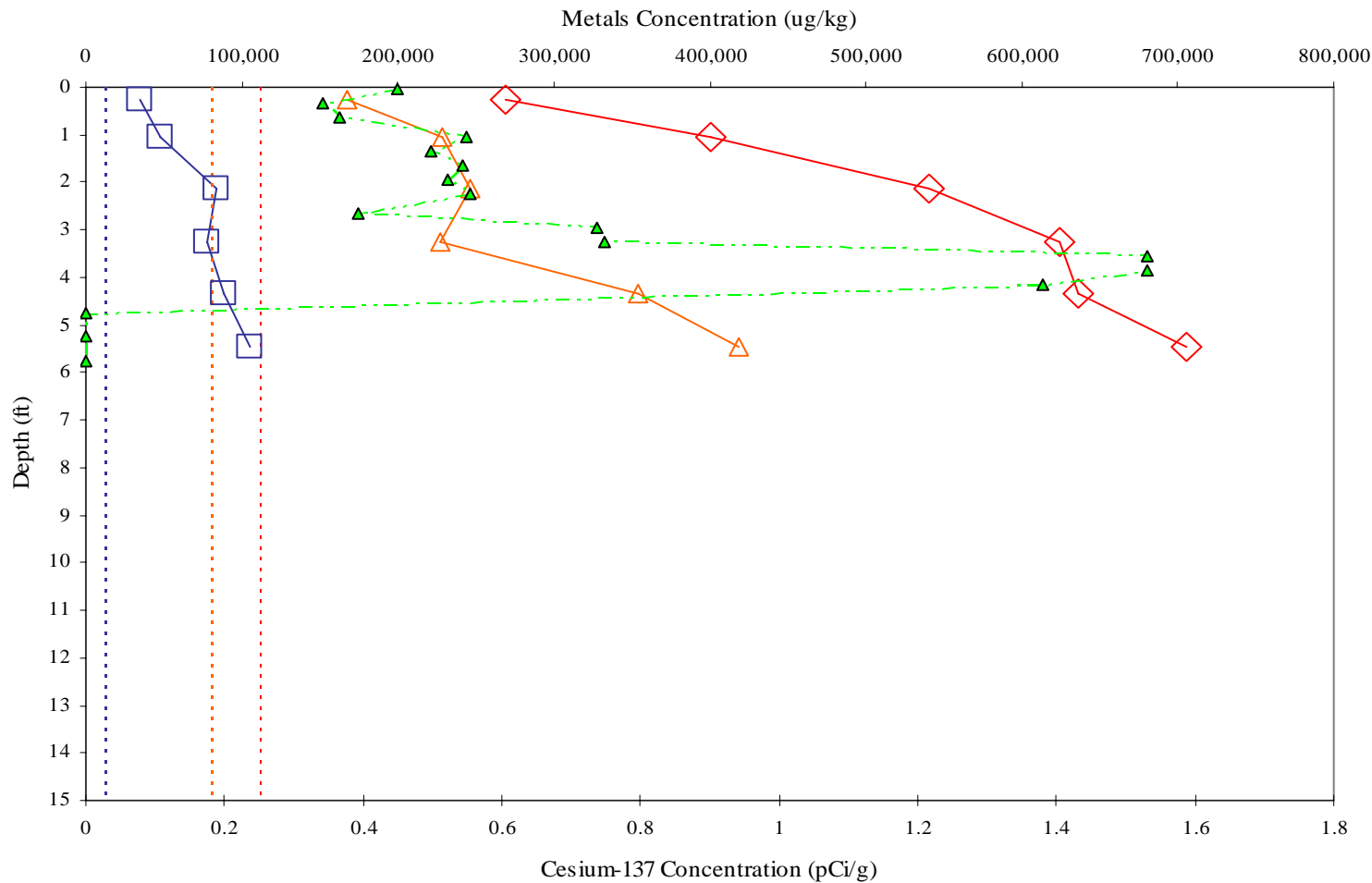
### Downcore Profile for Nickel, Barium, and Lead (River Mile 3.1)

*Lower Passaic River Restoration Project*

Figure 13-31d

September 2008





#### Legend

- Nickel Detect
- Barium Detect
- Lead Detect
- Nickel Background
- Barium Background
- Lead Background
- Cesium-137

#### Location

May 1995, River Mile 3.3  
TSI Location 232

Note:  
Metals background concentrations  
were taken from Sanders, P.F., May 2003.  
"Ambient Levels of Metals in New Jersey  
Soils."

Available online: <http://www.state.nj.us/dep/dsr/research/ambient-levels-metal.pdf>



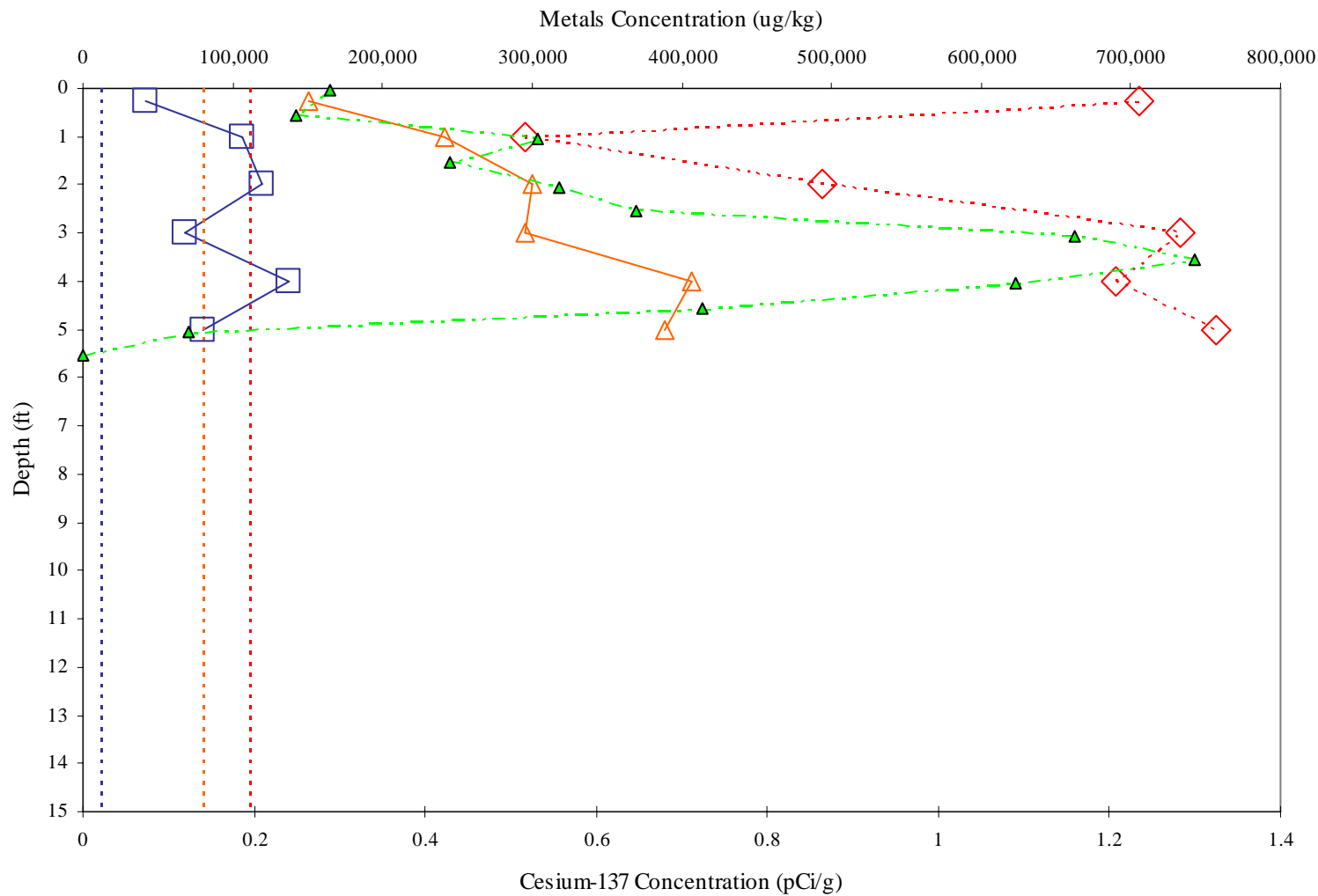
### Downcore Profile for Nickel, Barium, and Lead (River Mile 3.3)

Lower Passaic River Restoration Project

Figure 13-31e

September 2008





#### Legend

- Nickel Detect
- △— Barium Detect
- ◇— Lead Detect
- Nickel Background
- Barium Background
- Lead Background
- ▲--- Cesium-137

#### Location

June 1995, River Mile 3.3  
TSI Location 286

Note:  
Metals background concentrations  
were taken from Sanders, P.F., May 2003.  
"Ambient Levels of Metals in New Jersey  
Soils."

Available online: <http://www.state.nj.us/dep/dsr/research/ambient-levels-metal.pdf>



### Downcore Profile for Nickel, Barium, and Lead (River Mile 3.3)

*Lower Passaic River Restoration Project*

Figure 13-31f

September 2008



# Legend

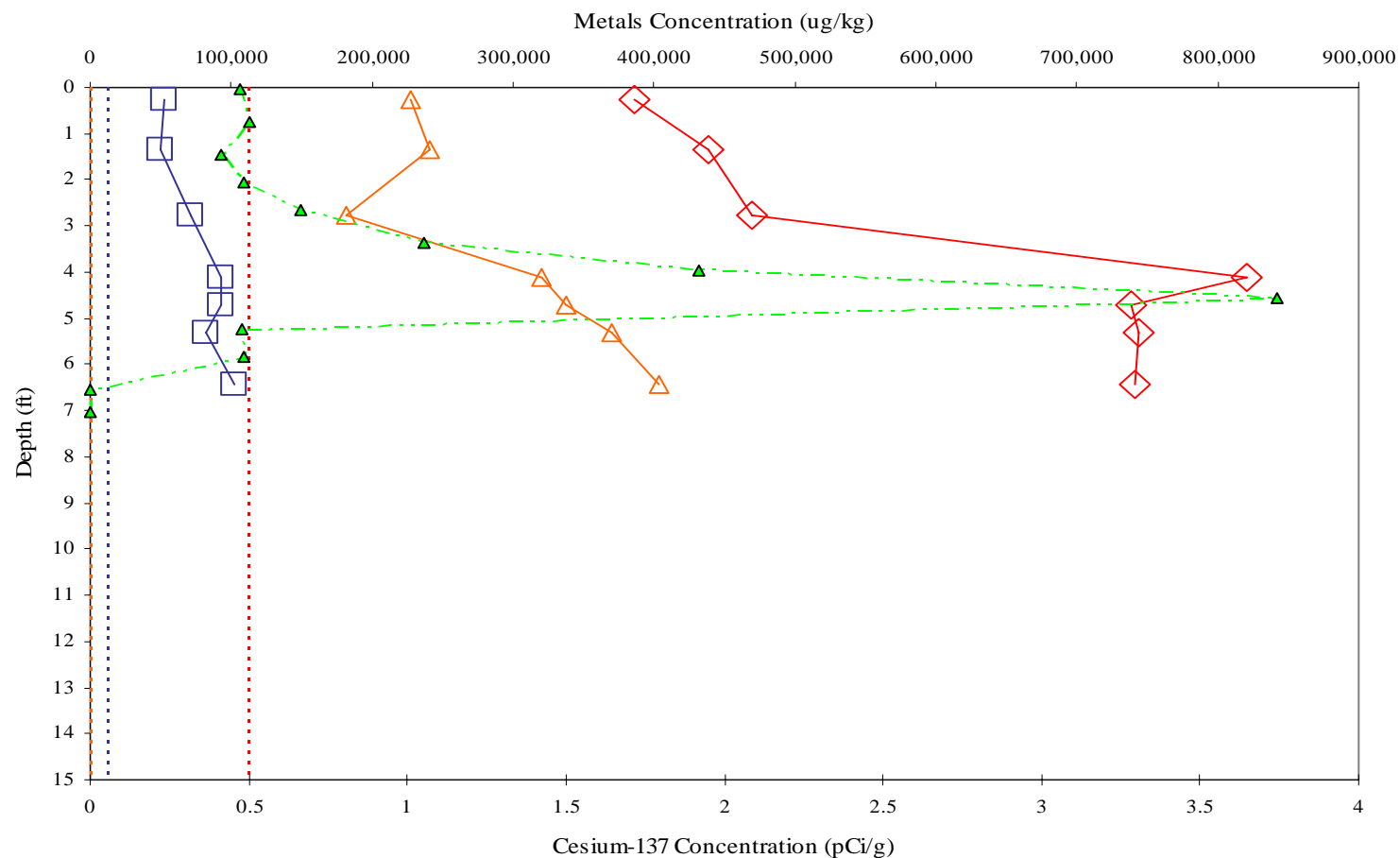
- Nickel Detect
- △— Barium Detect
- ◇— Lead Detect
- Nickel Background
- Barium Background
- Lead Background
- △— Cesium-137

# Location

May 1995, River Mile 3.6  
TSI Location 235

Note:  
Metals background concentrations  
were taken from Sanders, P.F., May 2003.  
"Ambient Levels of Metals in New Jersey  
Soils."

Available online: <http://www.state.nj.us/dep/dsr/research/ambient-levels-metal.pdf>



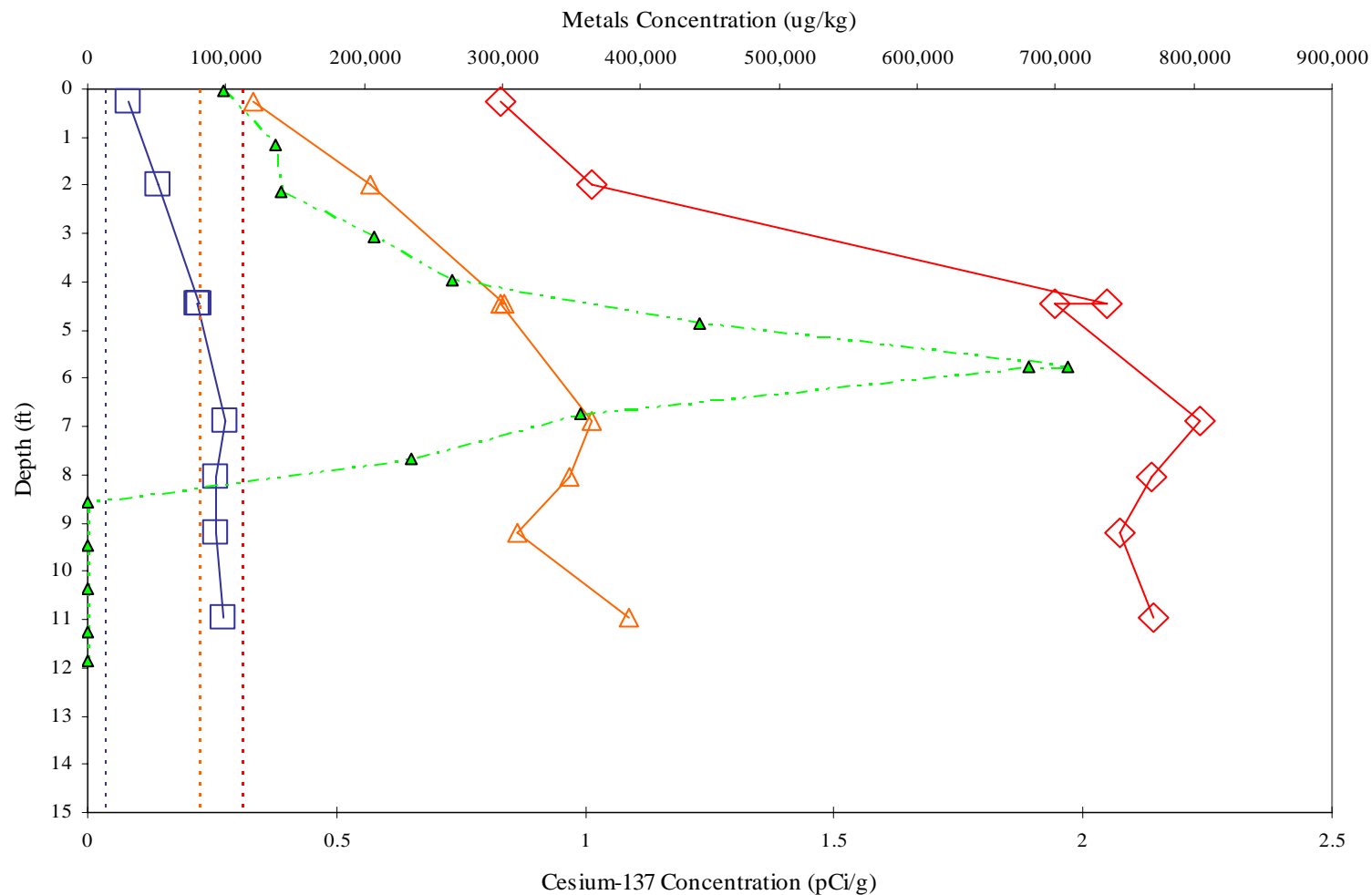
## Downcore Profile for Nickel, Barium, and Lead (River Mile 3.6)

Lower Passaic River Restoration Project

Figure 13-31g

September 2008





#### Legend

- Nickel Detect
- △— Barium Detect
- ◇— Lead Detect
- Nickel Background
- Barium Background
- Lead Background
- ▲— Cesium-137

#### Location

May 1995, River Mile 4.0  
TSI Location 241

Note:  
Metals background concentrations  
were taken from Sanders, P.F., May 2003.  
"Ambient Levels of Metals in New Jersey  
Soils."

Available online: <http://www.state.nj.us/dep/dsr/research/ambient-levels-metal.pdf>



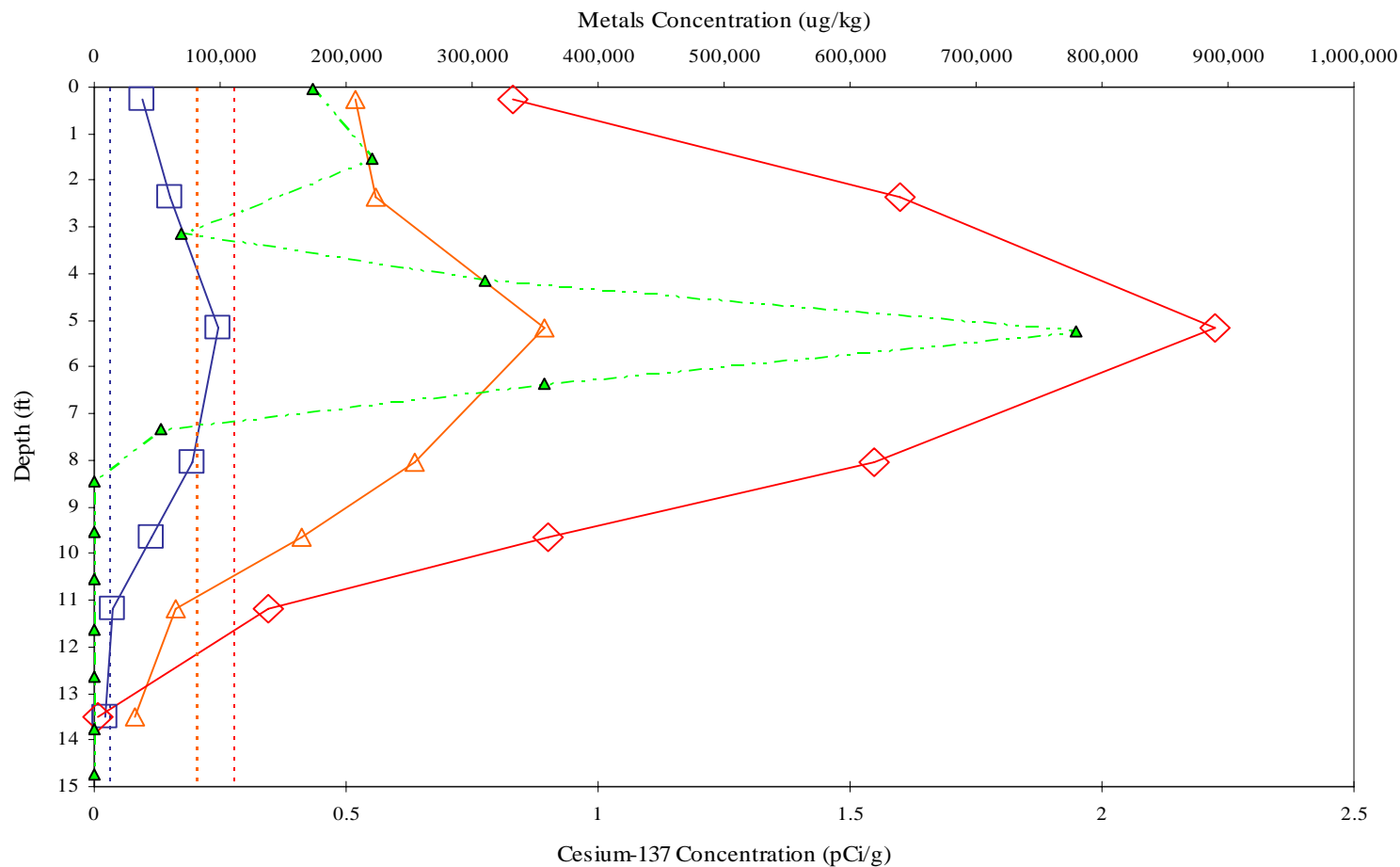
### Downcore Profile for Nickel, Barium, and Lead (River Mile 4.0)

*Lower Passaic River Restoration Project*

Figure 13-31h

September 2008





# Legend

- Nickel Detect
- Barium Detect
- Lead Detect
- Nickel Background
- Barium Background
- Lead Background
- Cesium-137
- Lead Background
- Cesium-137

## Location

May 1995, River Mile 4.5  
TSI Location 248

Note:  
Metals background concentrations  
were taken from Sanders, P.F., May 2003.  
"Ambient Levels of Metals in New Jersey  
Soils."

Available online: <http://www.state.nj.us/dep/dsr/research/ambient-levels-metal.pdf>



## Downcore Profile for Nickel, Barium, and Lead (River Mile 4.5)

Lower Passaic River Restoration Project

Figure 13-31i

September 2008



# Legend

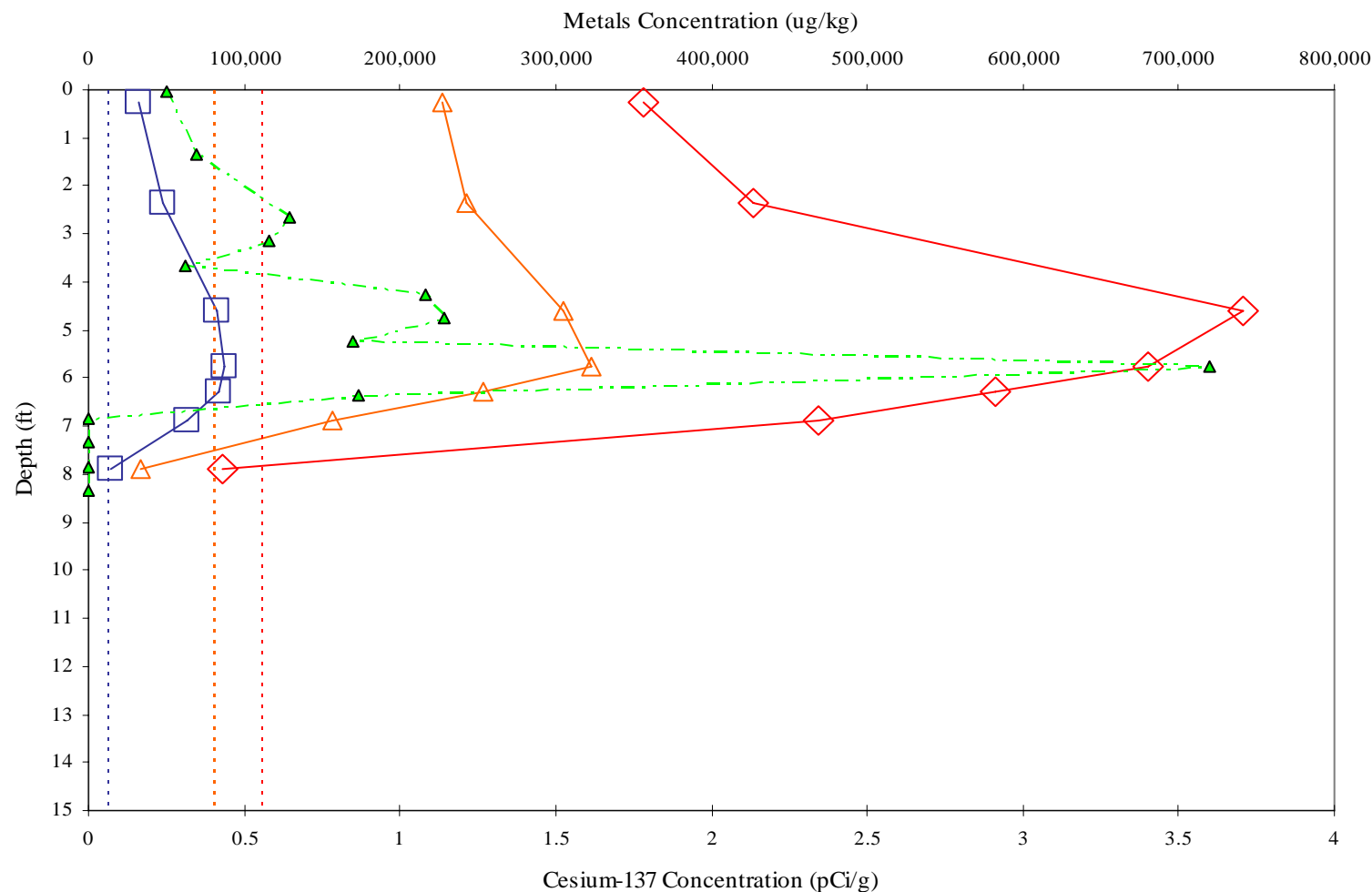
- Nickel Detect
- Barium Detect
- Lead Detect
- Nickel Background
- Barium Background
- Lead Background
- Cesium-137

# Location

May 1995, River Mile 4.7  
TSI Location 251

Note:  
Metals background concentrations  
were taken from Sanders, P.F., May 2003.  
"Ambient Levels of Metals in New Jersey  
Soils."

Available online: <http://www.state.nj.us/dep/dsr/research/ambient-levels-metal.pdf>



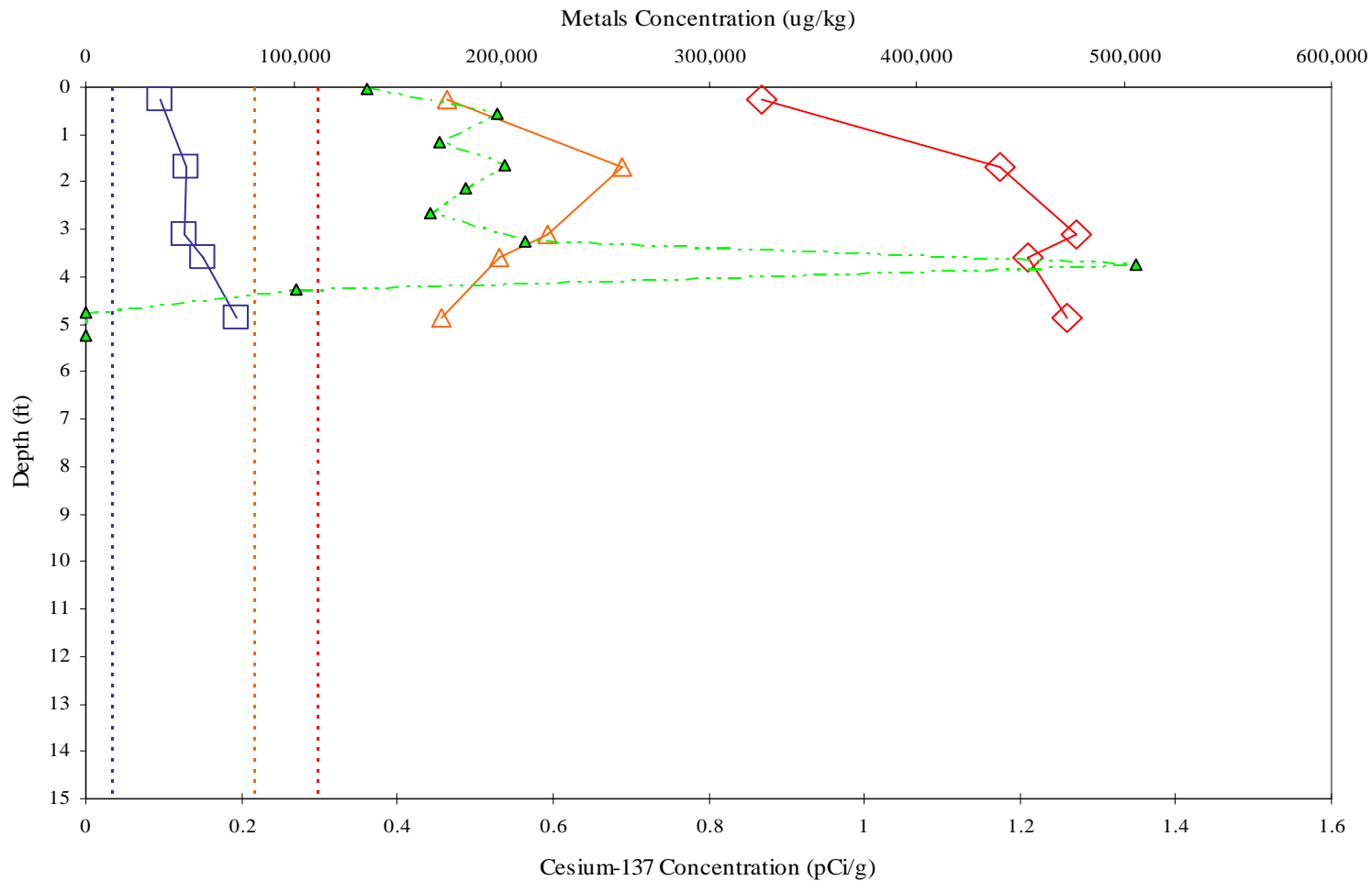
## Downcore Profile for Nickel, Barium, and Lead (River Mile 4.7)

Lower Passaic River Restoration Project

Figure 13-31j

September 2008





#### Legend

- Nickel Detect
- △— Barium Detect
- ◇— Lead Detect
- Nickel Background
- Barium Background
- Lead Background
- ▲ Cesium-137

#### Location

May1995, River Mile 4.9  
TSI Location 253

Note:  
Metals background concentrations  
were taken from Sanders, P.F., May 2003.  
"Ambient Levels of Metals in New Jersey  
Soils."

Available online: <http://www.state.nj.us/dep/dsr/research/ambient-levels-metal.pdf>



### Downcore Profile for Nickel, Barium, and Lead (River Mile 4.9)

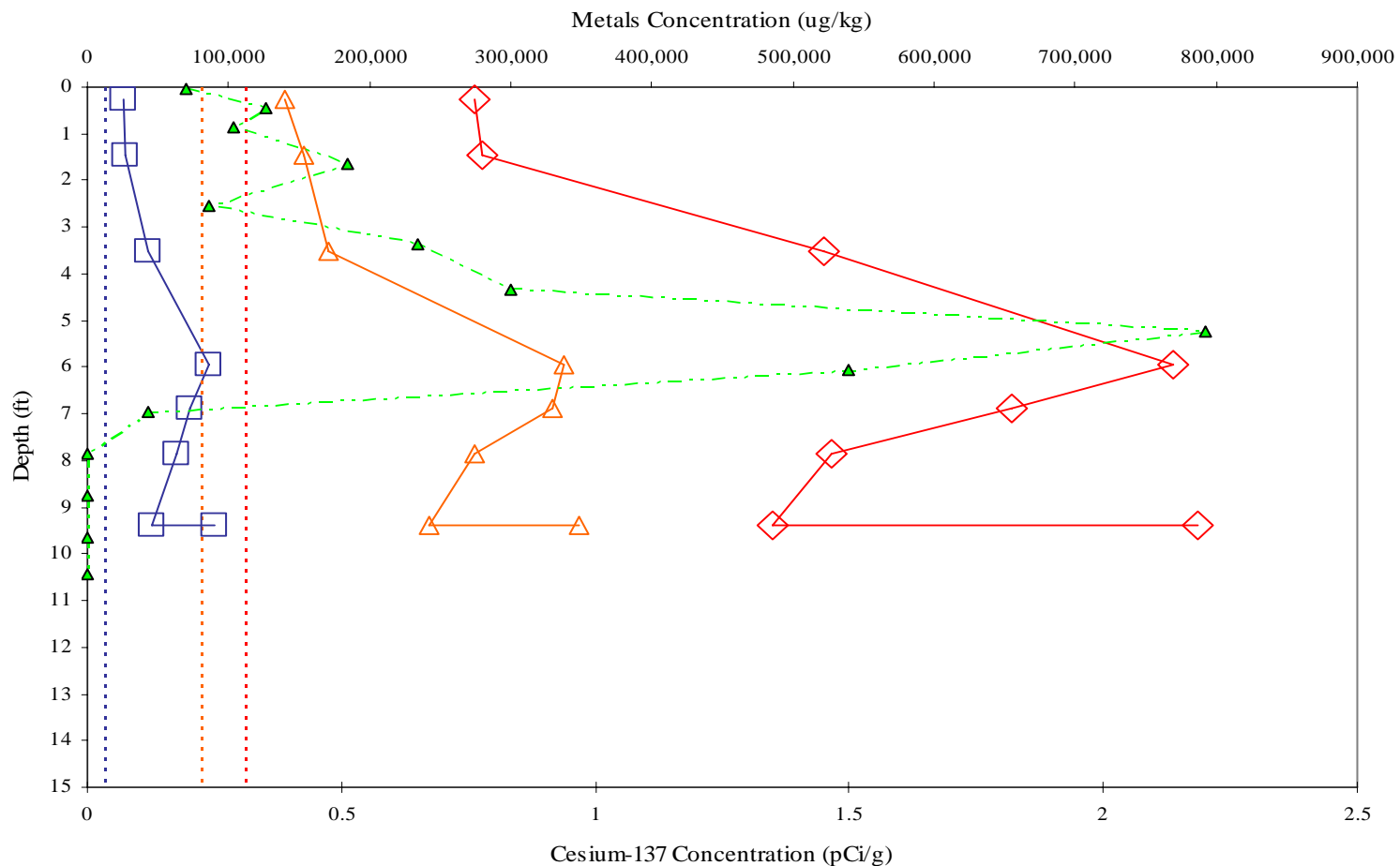
*Lower Passaic River Restoration Project*

Figure 13-31k

September 2008







#### Legend

- Nickel Detect
- △— Barium Detect
- ◇— Lead Detect
- Nickel Background
- Barium Background
- Lead Background
- △— Cesium-137

#### Location

May 1995, River Mile 6.3  
TSI Location 272

Note:  
Metals background concentrations  
were taken from Sanders, P.F., May 2003.  
"Ambient Levels of Metals in New Jersey  
Soils."

Available online: <http://www.state.nj.us/dep/dsr/research/ambient-levels-metal.pdf>



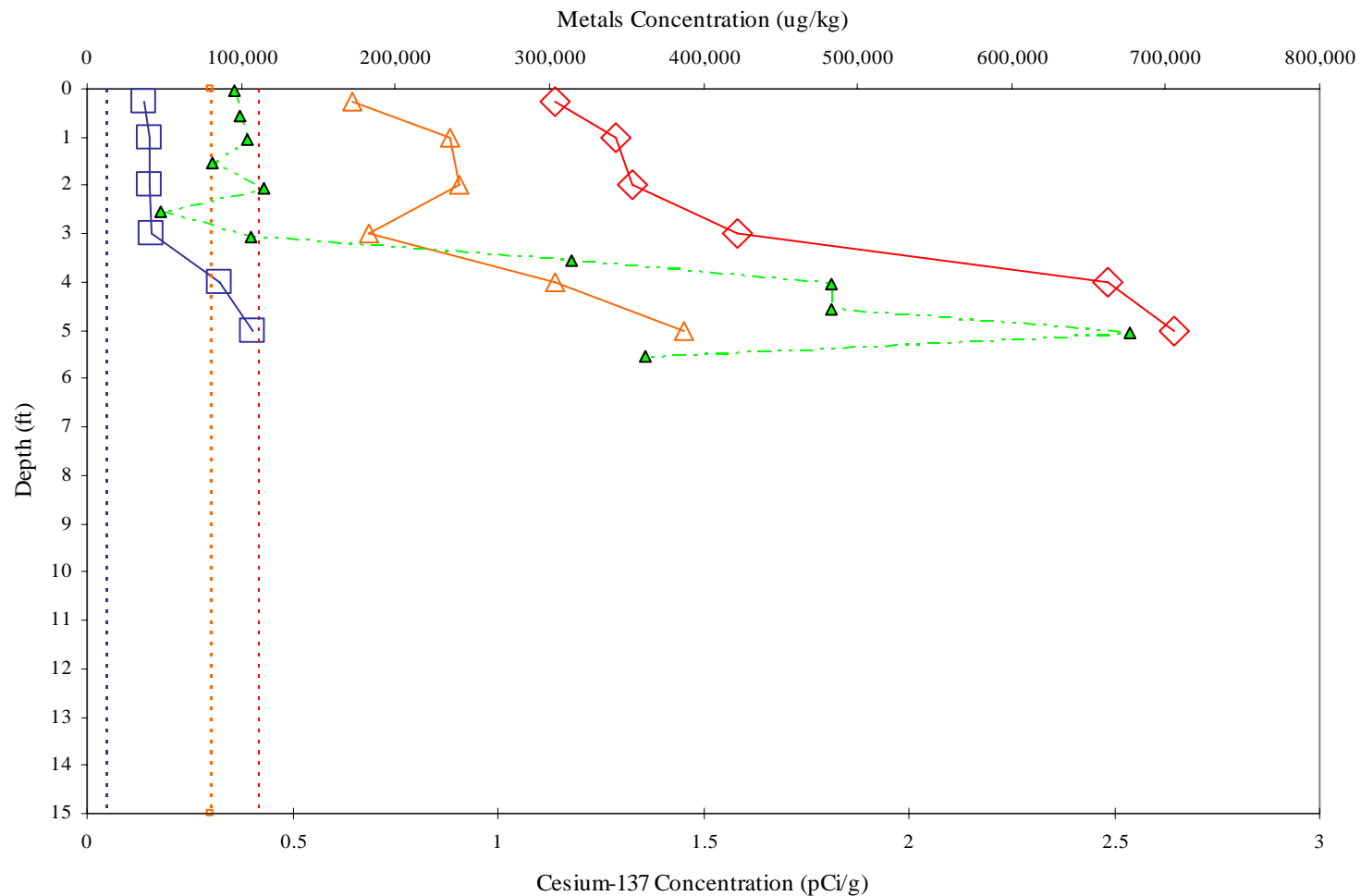
### Downcore Profile for Nickel, Barium, and Lead (River Mile 6.3)

*Lower Passaic River Restoration Project*

Figure 13-31I

September 2008





#### Legend

- Nickel Detect
- Barium Detect
- Lead Detect
- Nickel Background
- Barium Background
- Lead Background
- Cesium-137

#### Location

June 1995, River Mile 6.4  
TSI Location 298

Note:  
Metals background concentrations  
were taken from Sanders, P.F., May 2003.  
"Ambient Levels of Metals in New Jersey  
Soils."

Available online: <http://www.state.nj.us/dep/dsr/research/ambient-levels-metal.pdf>



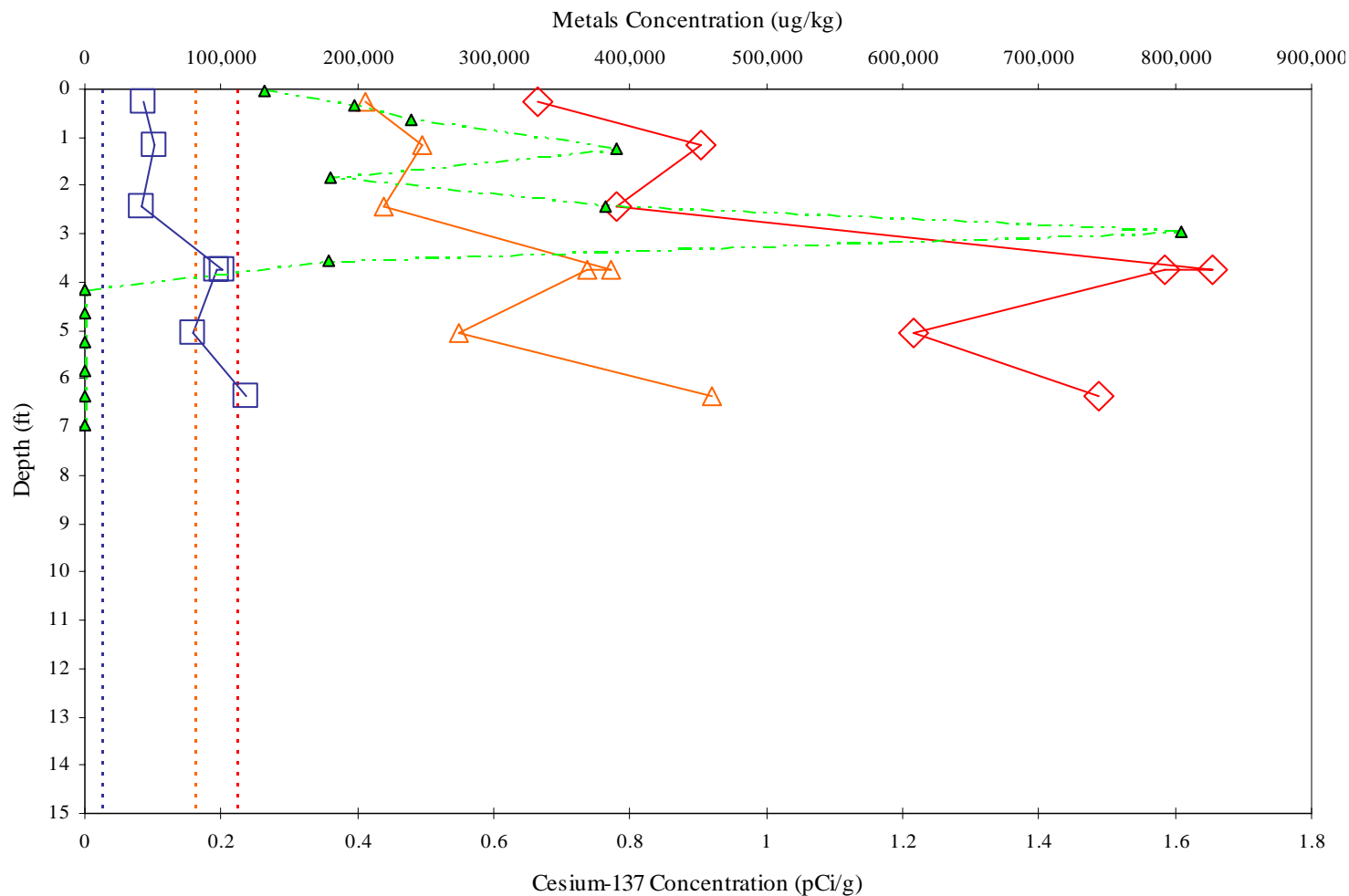
### Downcore Profile for Nickel, Barium, and Lead (River Mile 6.4)

Lower Passaic River Restoration Project

Figure 13-31m

September 2008





#### Legend

- Nickel Detect
- △— Barium Detect
- ◇— Lead Detect
- Nickel Background
- Barium Background
- Lead Background
- △— Cesium-137

#### Location

June 1995, River Mile 6.5  
TSI Location 275

Note:  
Metals background concentrations  
were taken from Sanders, P.F., May 2003.  
"Ambient Levels of Metals in New Jersey  
Soils."

Available online: <http://www.state.nj.us/dep/dsr/research/ambient-levels-metal.pdf>



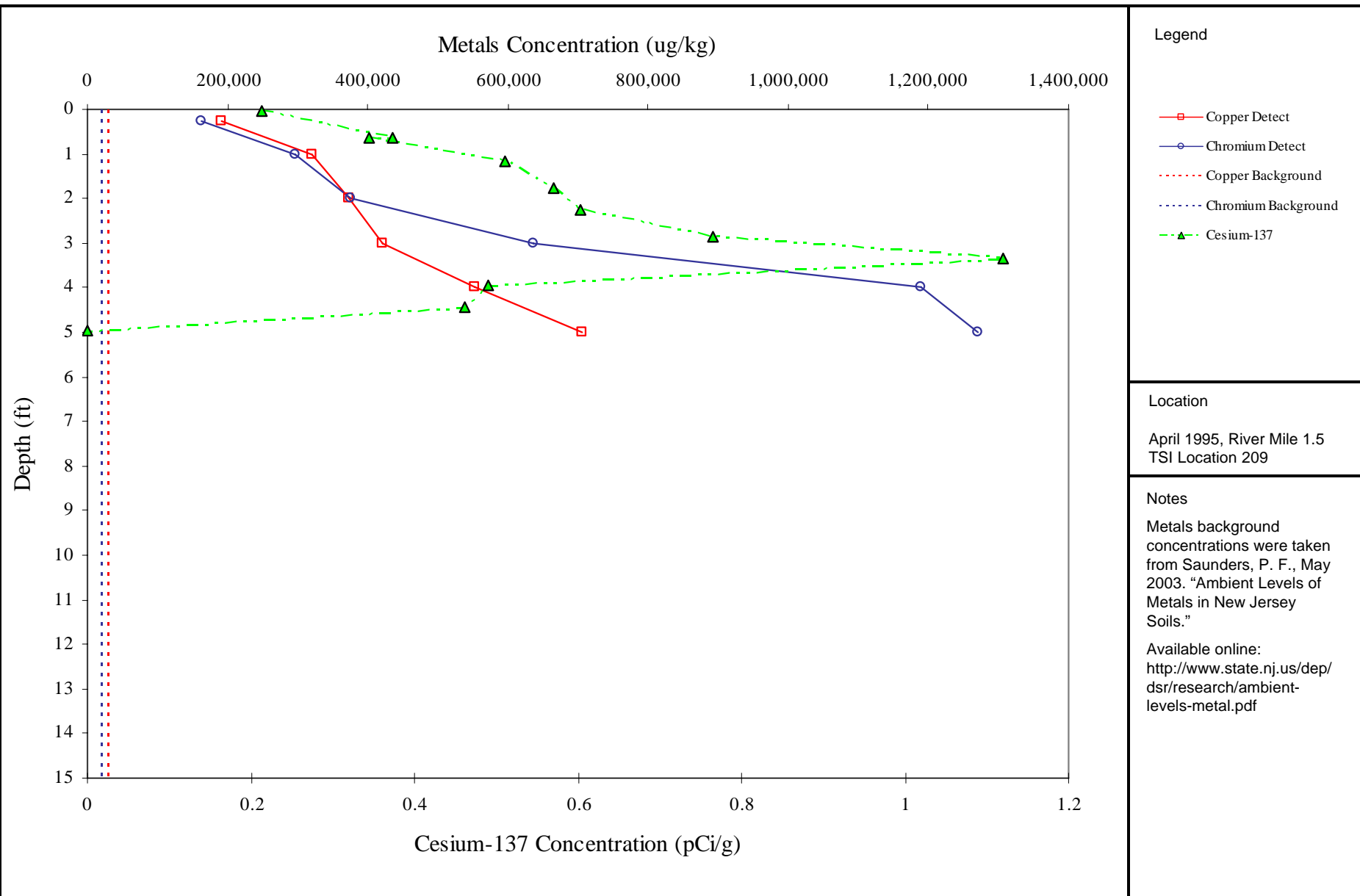
### Downcore Profile for Nickel, Barium, and Lead (River Mile 6.5)

*Lower Passaic River Restoration Project*

Figure 13-31n

September 2008





### Downcore Profile for Copper and Chromium (River Mile 1.5)

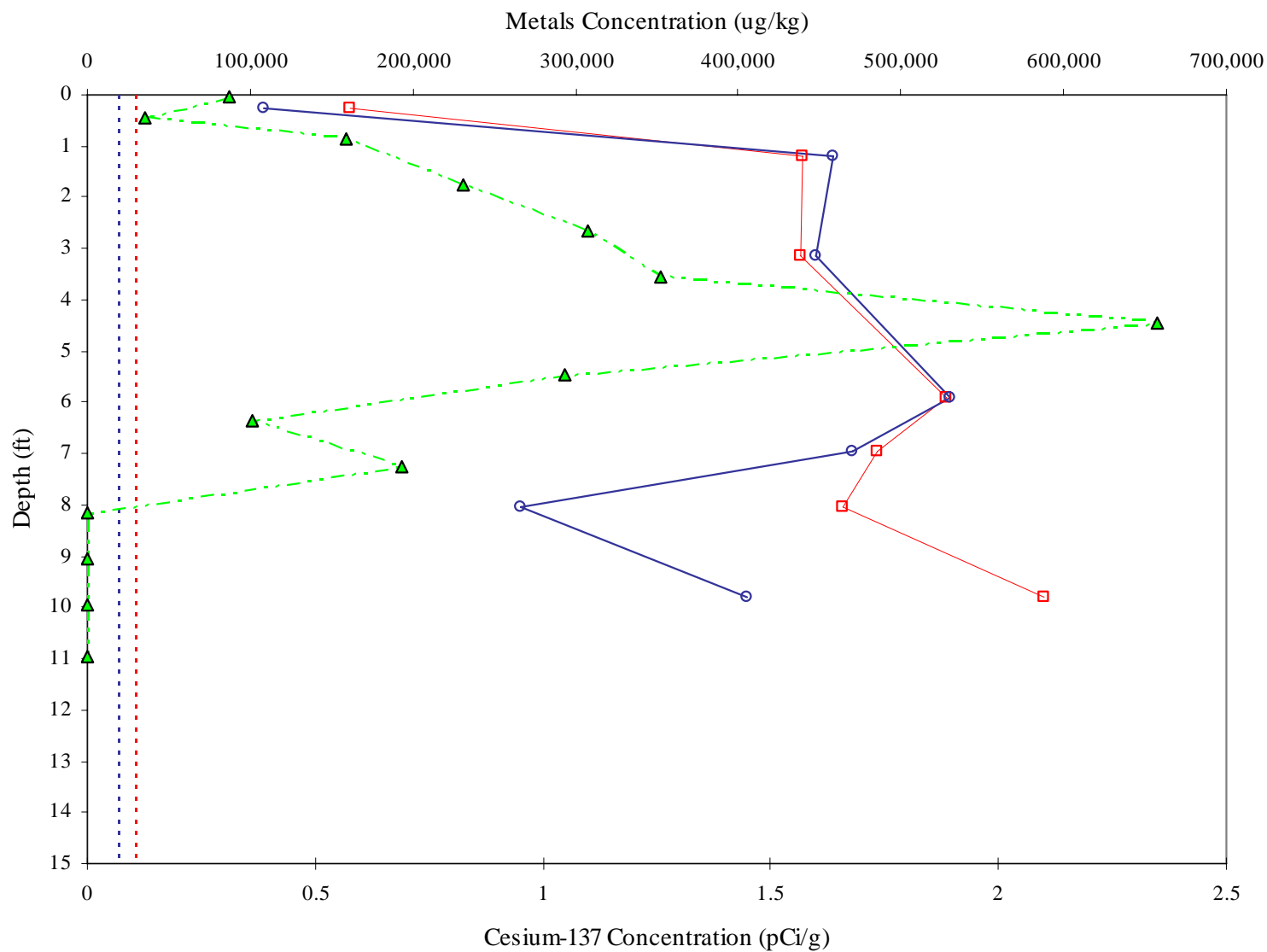
*Lower Passaic River Restoration Project*

Figure 13-32a

September 2008







#### Legend

- Copper Detect
- Chromium Detect
- Copper Background
- Chromium Background
- △--- Cesium-137

#### Location

May 1995, River Mile 3.1  
TSI Location 228

#### Notes

Metals background concentrations were taken from Saunders, P. F., May 2003. "Ambient Levels of Metals in New Jersey Soils."

Available online:  
<http://www.state.nj.us/dep/dsr/research/ambient-levels-metal.pdf>



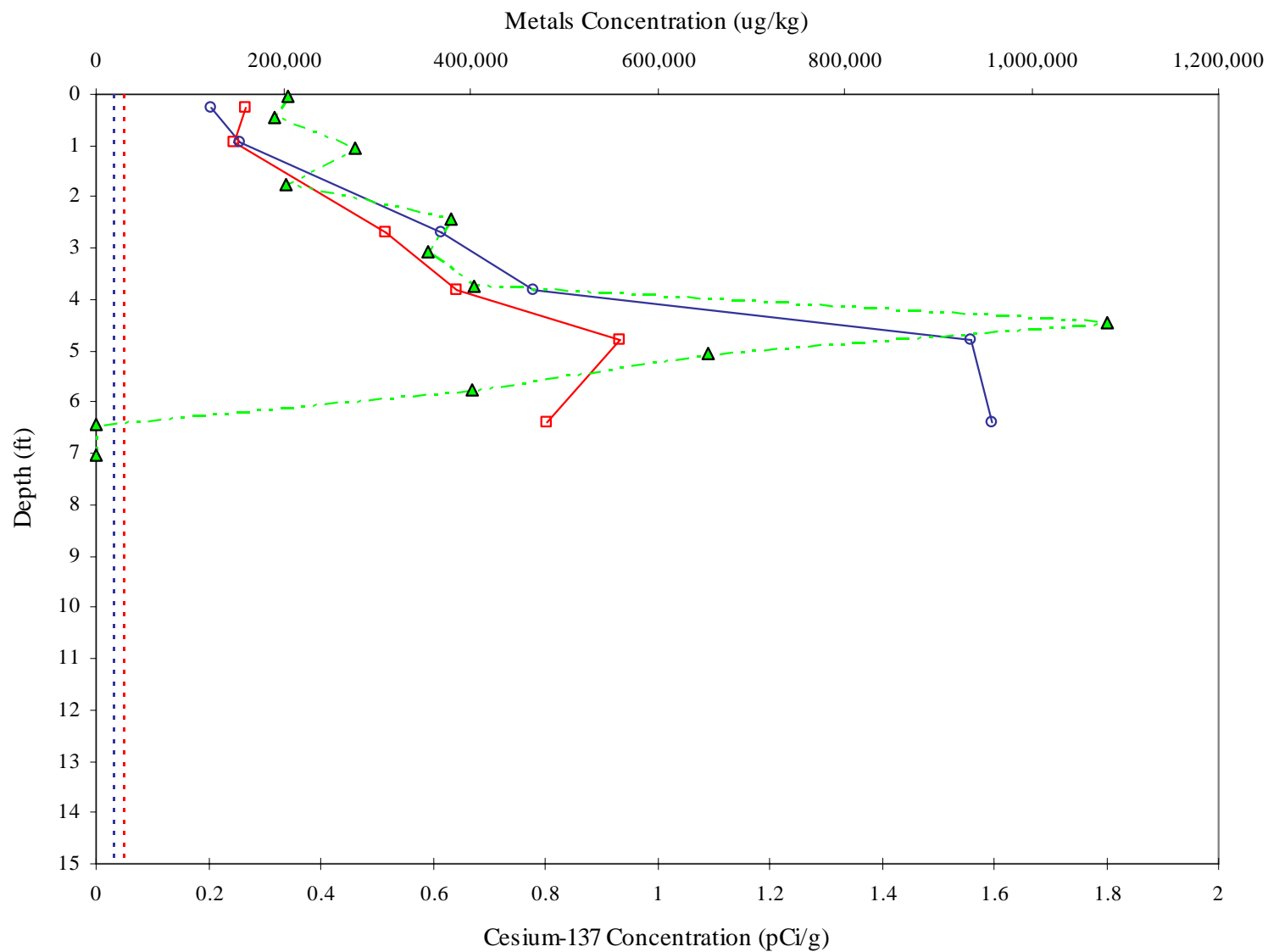
### Downcore Profile for Copper and Chromium (River Mile 3.1)

*Lower Passaic River Restoration Project*

Figure 13-32c

September 2008





#### Legend

- Copper Detect
- Chromium Detect
- ... Copper Background
- ... Chromium Background
- ▲- Cesium-137

#### Location

May 1995, River Mile 3.1  
TSI Location 230

#### Notes

Metals background concentrations were taken from Saunders, P. F., May 2003. "Ambient Levels of Metals in New Jersey Soils."

Available online:  
<http://www.state.nj.us/dep/dsr/research/ambient-levels-metal.pdf>



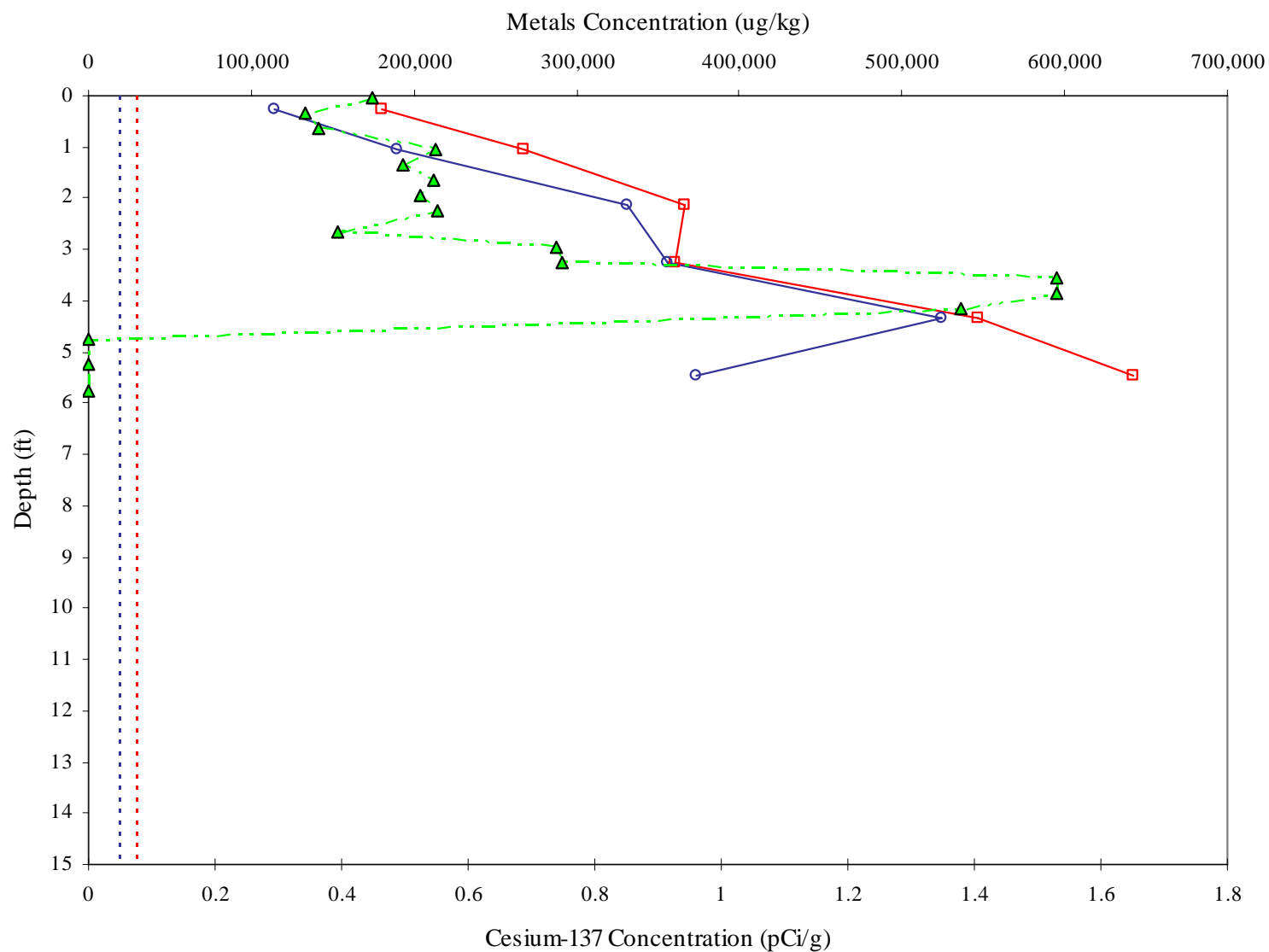
### Downcore Profile for Copper and Chromium (River Mile 3.1)

*Lower Passaic River Restoration Project*

Figure 13-32d

September 2008





#### Legend

- Copper Detect
- Chromium Detect
- Copper Background
- Chromium Background
- △— Cesium-137

#### Location

May 1995, River Mile 3.3  
TSI Location 232

#### Notes

Metals background concentrations were taken from Saunders, P. F., May 2003. "Ambient Levels of Metals in New Jersey Soils."

Available online:  
<http://www.state.nj.us/dep/dsr/research/ambient-levels-metal.pdf>



### Downcore Profile for Copper and Chromium (River Mile 3.3)

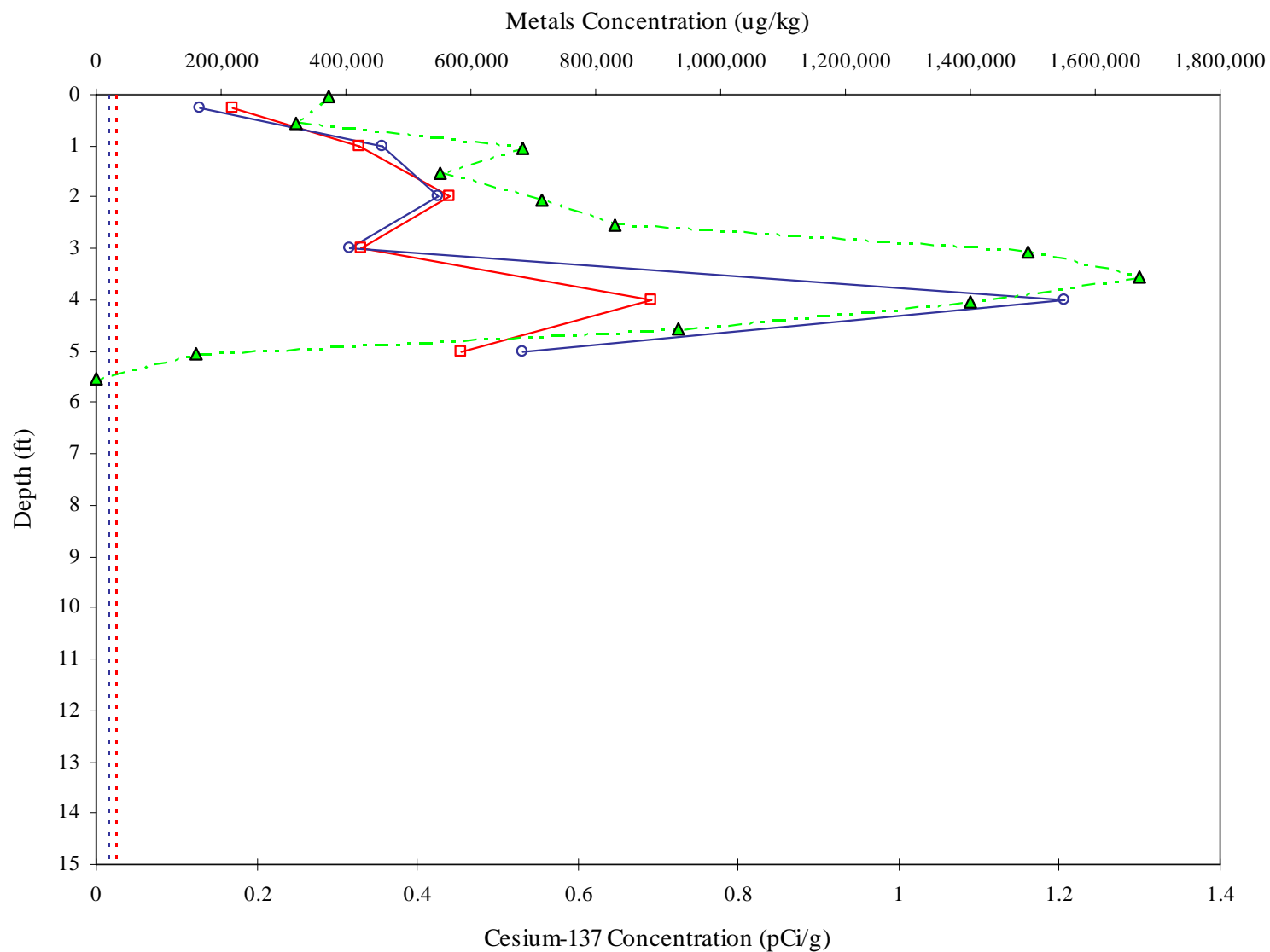
*Lower Passaic River Restoration Project*

Figure 13-32e

September 2008







#### Legend

- Copper Detect
- Chromium Detect
- ... Copper Background
- ... Chromium Background
- ▲- Cesium-137

#### Location

June 1995, River Mile 3.3  
TSI Location 286

#### Notes

Metals background concentrations were taken from Saunders, P. F., May 2003. "Ambient Levels of Metals in New Jersey Soils."

Available online:  
<http://www.state.nj.us/dep/dsr/research/ambient-levels-metal.pdf>



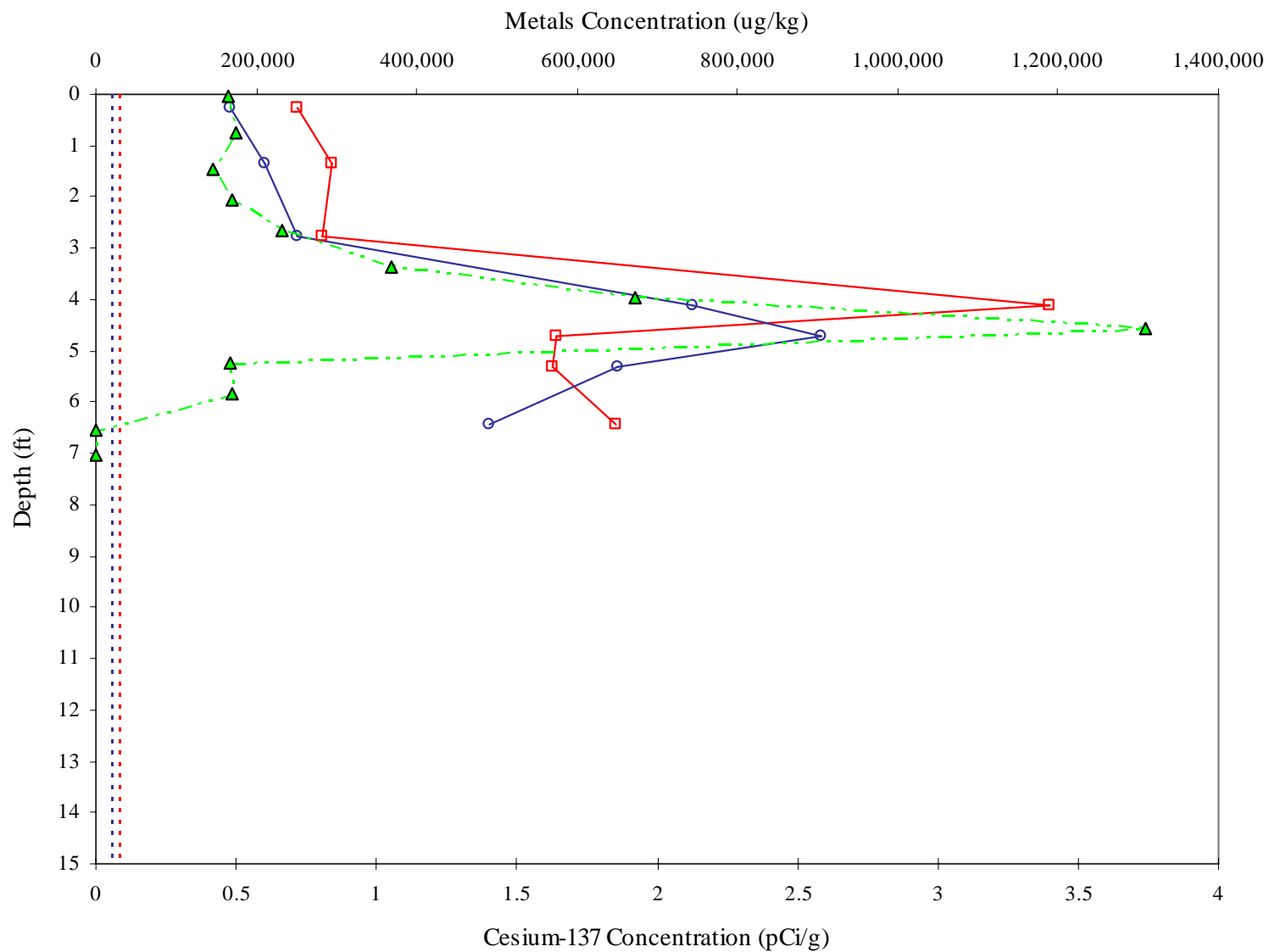
### Downcore Profile for Copper and Chromium (River Mile 3.3)

*Lower Passaic River Restoration Project*

Figure 13-32f

September 2008





#### Legend

- Copper Detect
- Chromium Detect
- ... Copper Background
- ... Chromium Background
- △— Cesium-137

#### Location

May 1995, River Mile 3.6  
TSI Location 235

#### Notes

Metals background concentrations were taken from Saunders, P. F., May 2003. "Ambient Levels of Metals in New Jersey Soils."

Available online:  
<http://www.state.nj.us/dep/dsr/research/ambient-levels-metal.pdf>



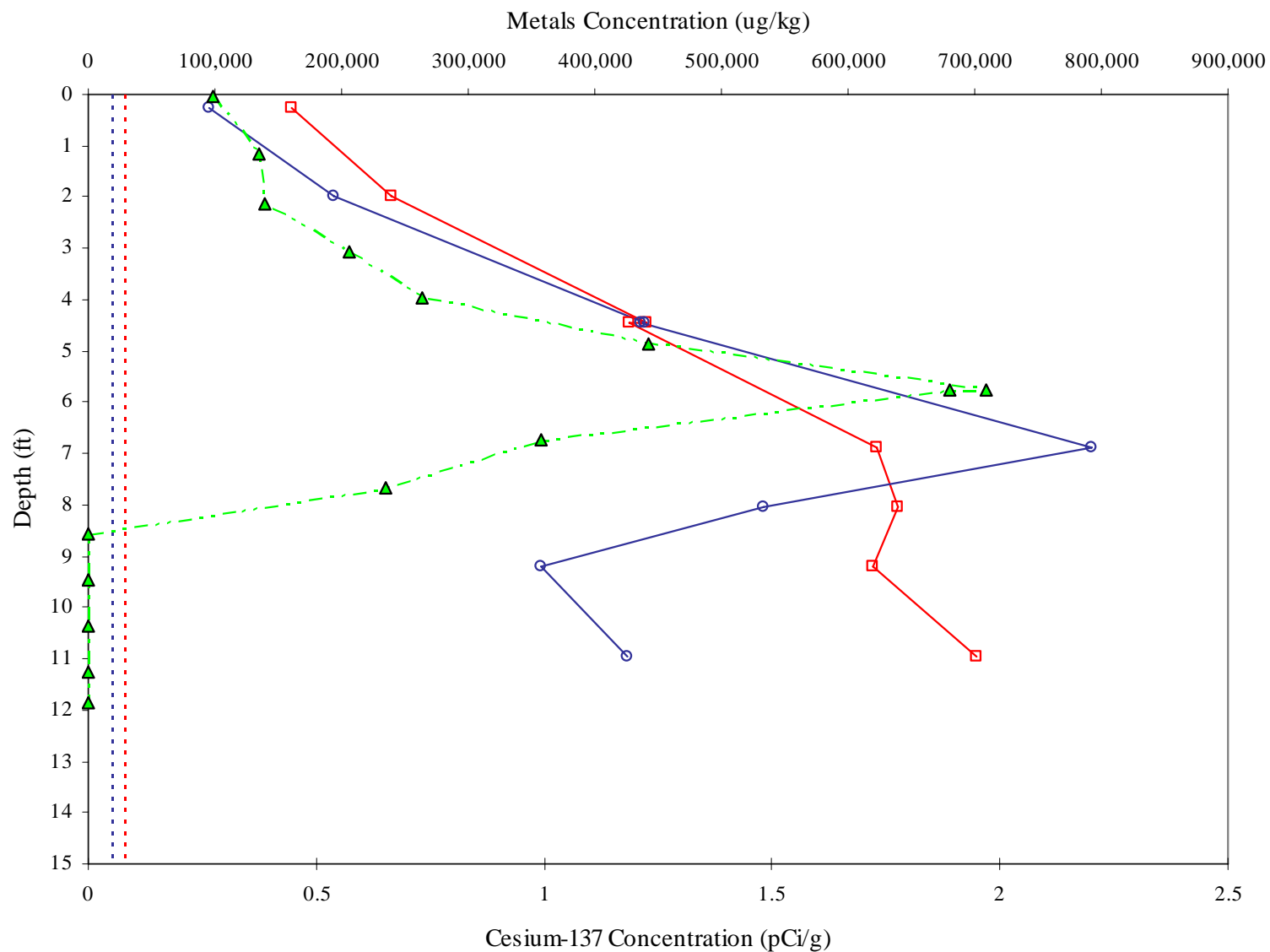
### Downcore Profile for Copper and Chromium (River Mile 3.6)

*Lower Passaic River Restoration Project*

Figure 13-32g

September 2008





#### Legend

- Copper Detect
- Chromium Detect
- ... Copper Background
- ... Chromium Background
- ▲- Cesium-137

#### Location

May 1995, River Mile 4.0  
TSI Location 241

#### Notes

Metals background concentrations were taken from Saunders, P. F., May 2003. "Ambient Levels of Metals in New Jersey Soils."

Available online:  
<http://www.state.nj.us/dep/dsr/research/ambient-levels-metal.pdf>



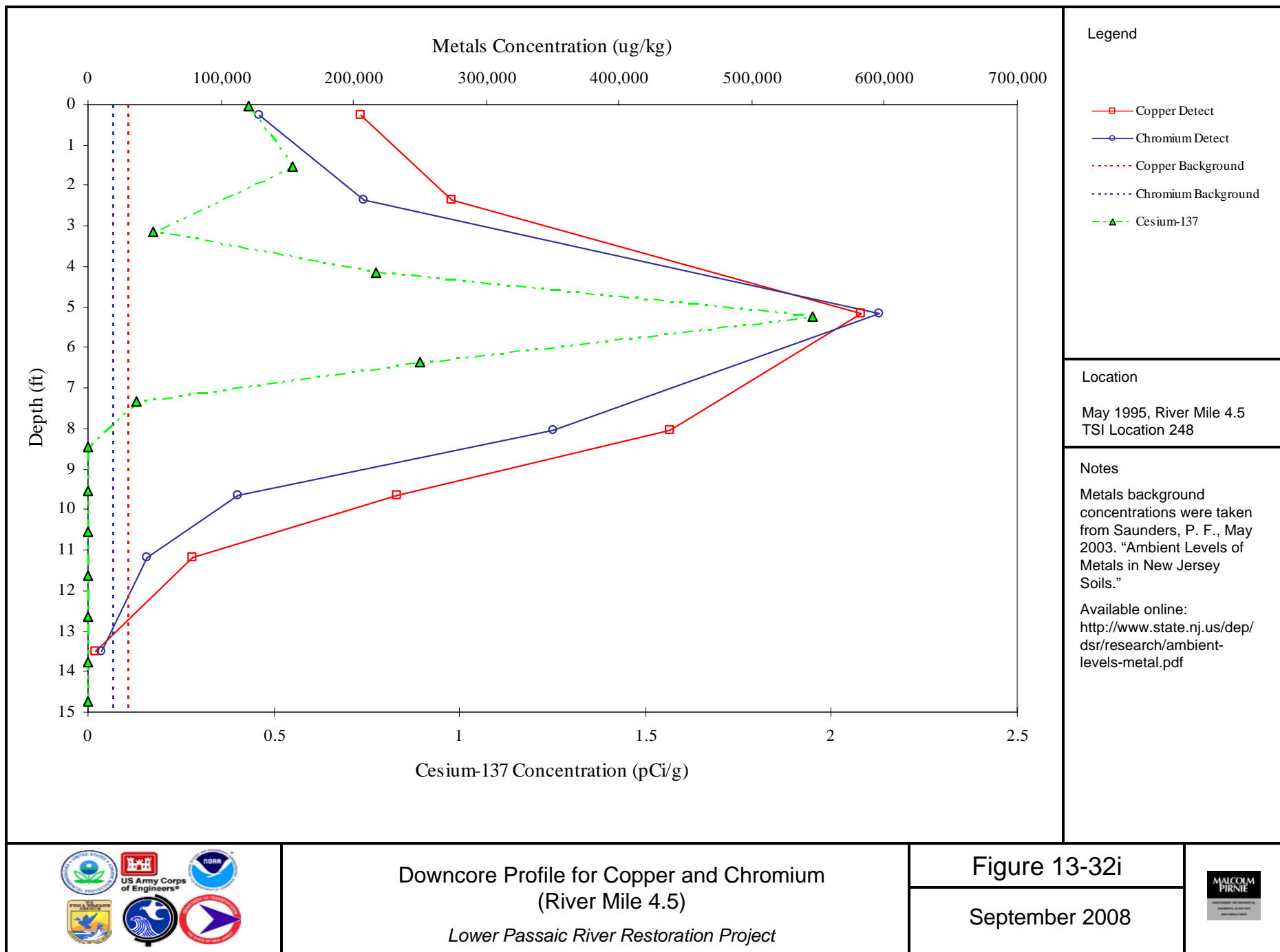
### Downcore Profile for Copper and Chromium (River Mile 4.0)

*Lower Passaic River Restoration Project*

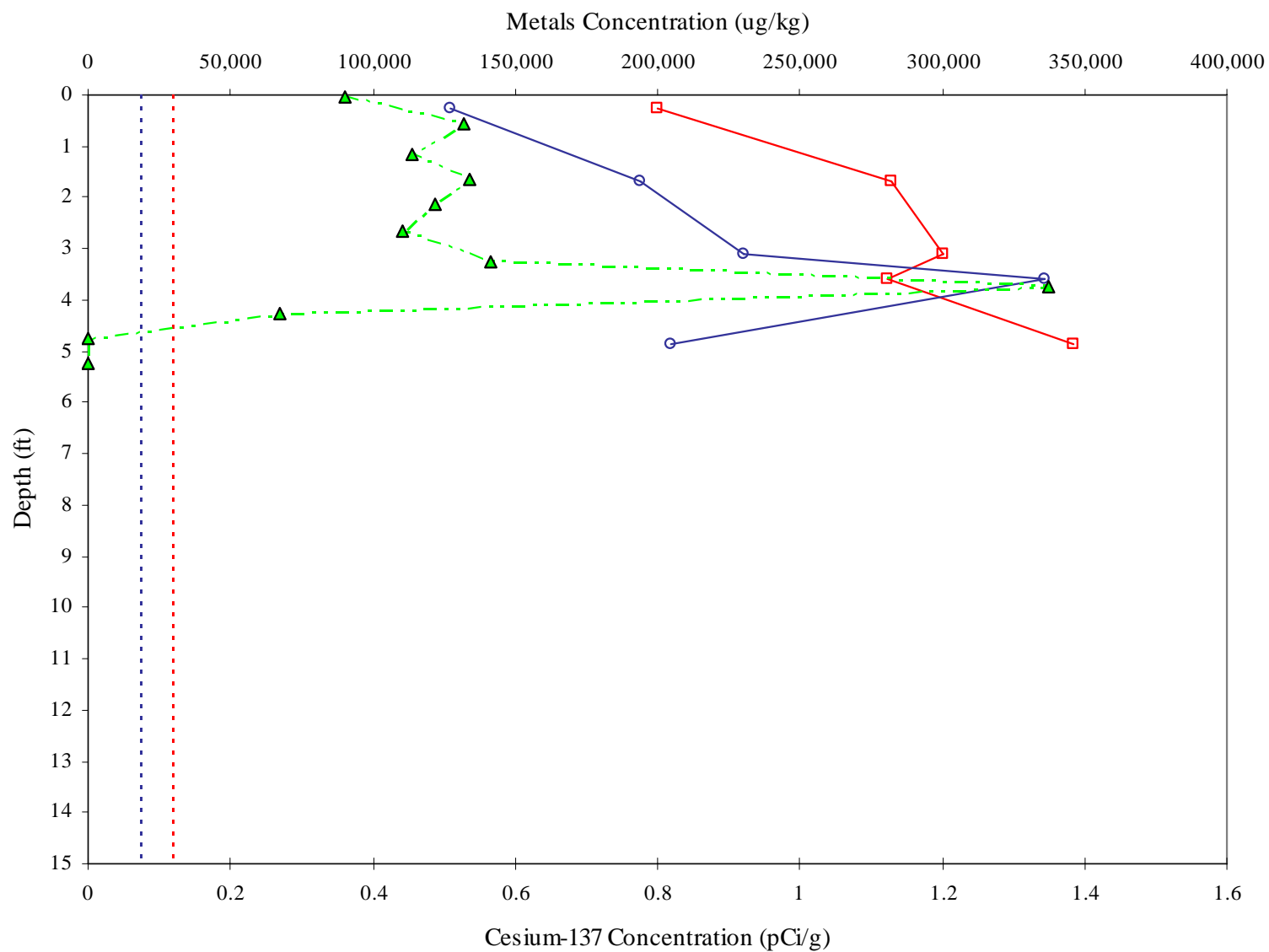
Figure 13-32h

September 2008









#### Legend

- Copper Detect
- Chromium Detect
- ... Copper Background
- ... Chromium Background
- ▲- Cesium-137

#### Location

May 1995, River Mile 4.9  
TSI Location 253

#### Notes

Metals background concentrations were taken from Saunders, P. F., May 2003. "Ambient Levels of Metals in New Jersey Soils."

Available online:  
<http://www.state.nj.us/dep/dsr/research/ambient-levels-metal.pdf>



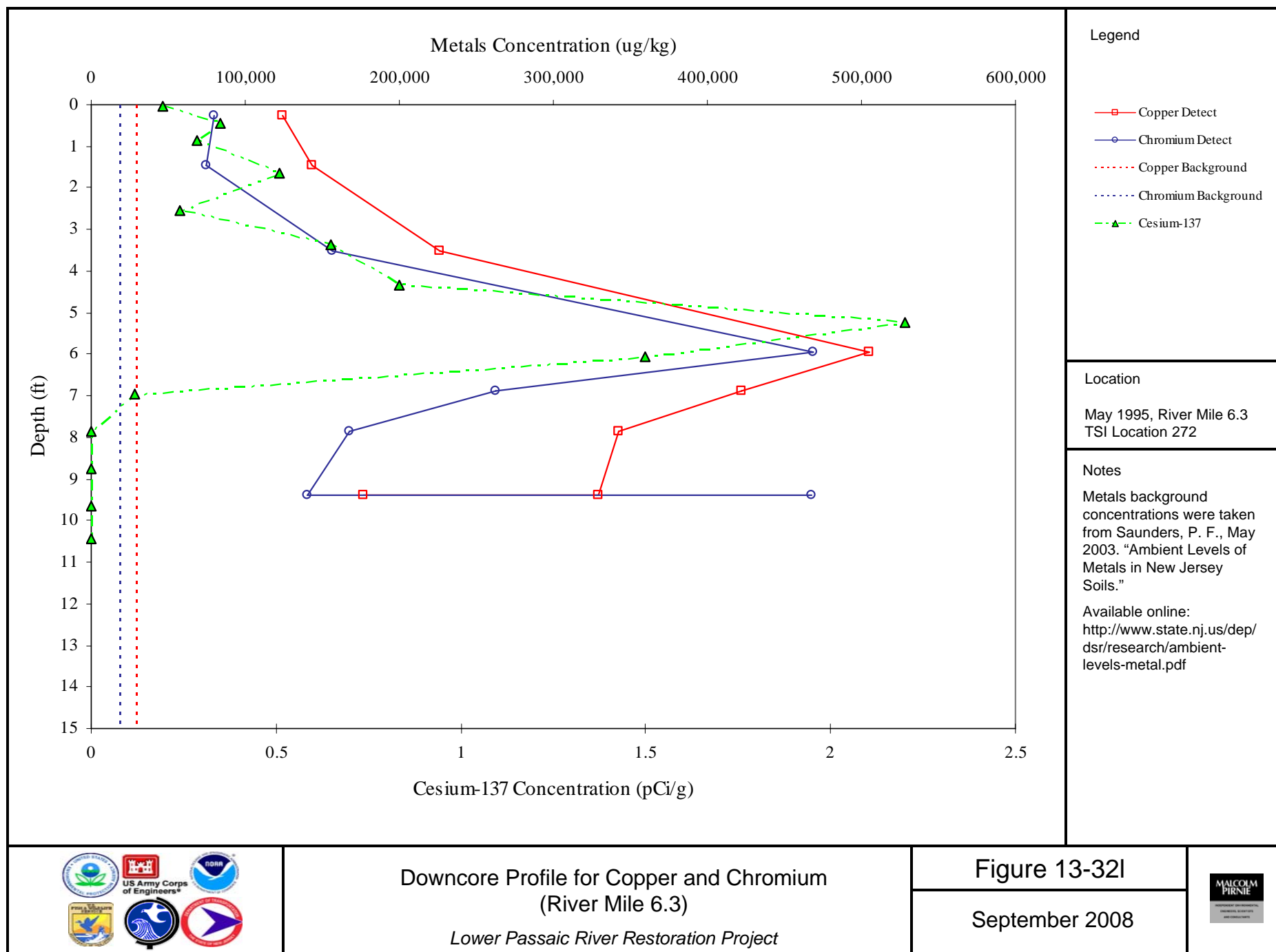
### Downcore Profile for Copper and Chromium (River Mile 4.9)

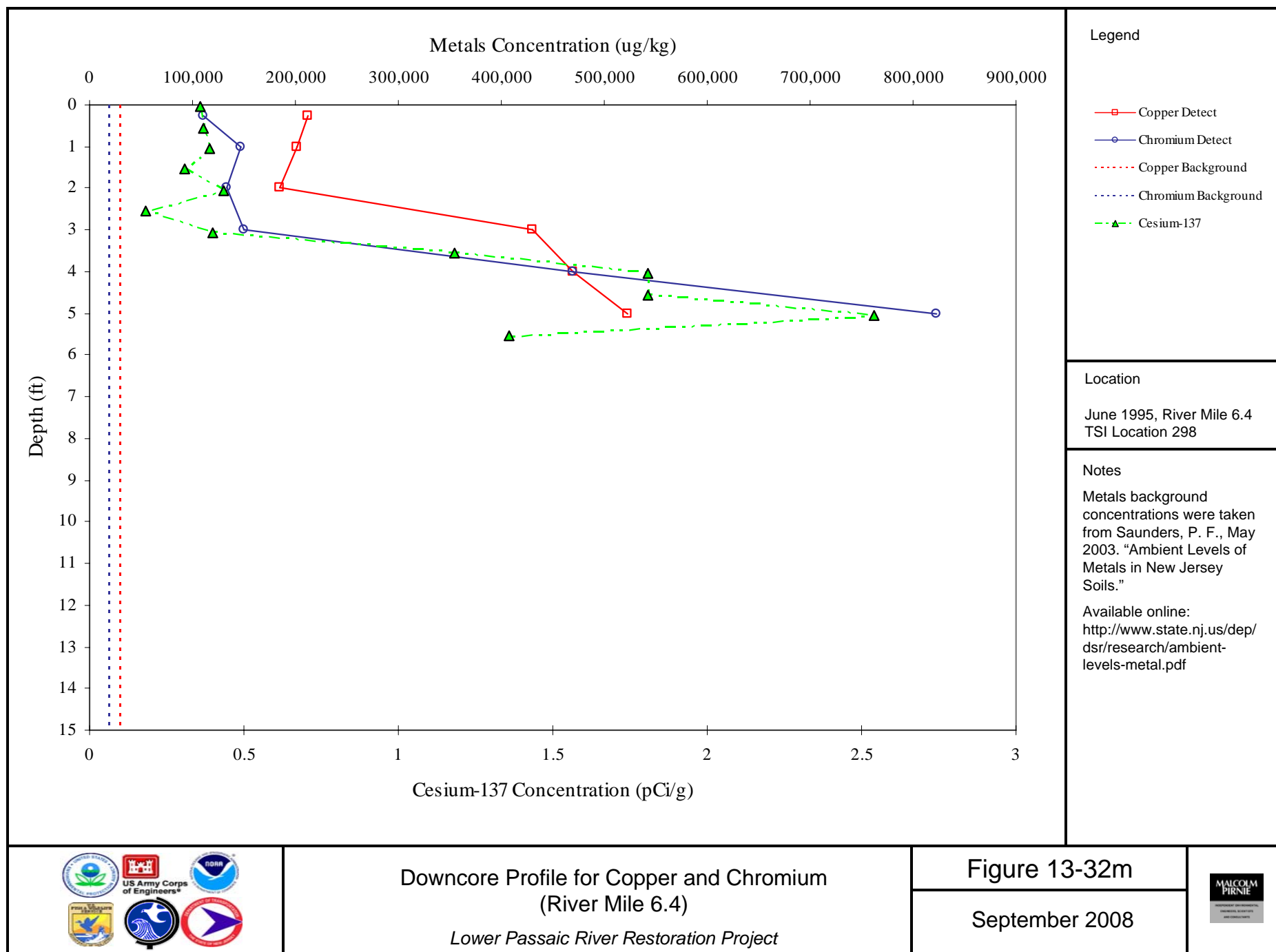
*Lower Passaic River Restoration Project*

Figure 13-32k

September 2008



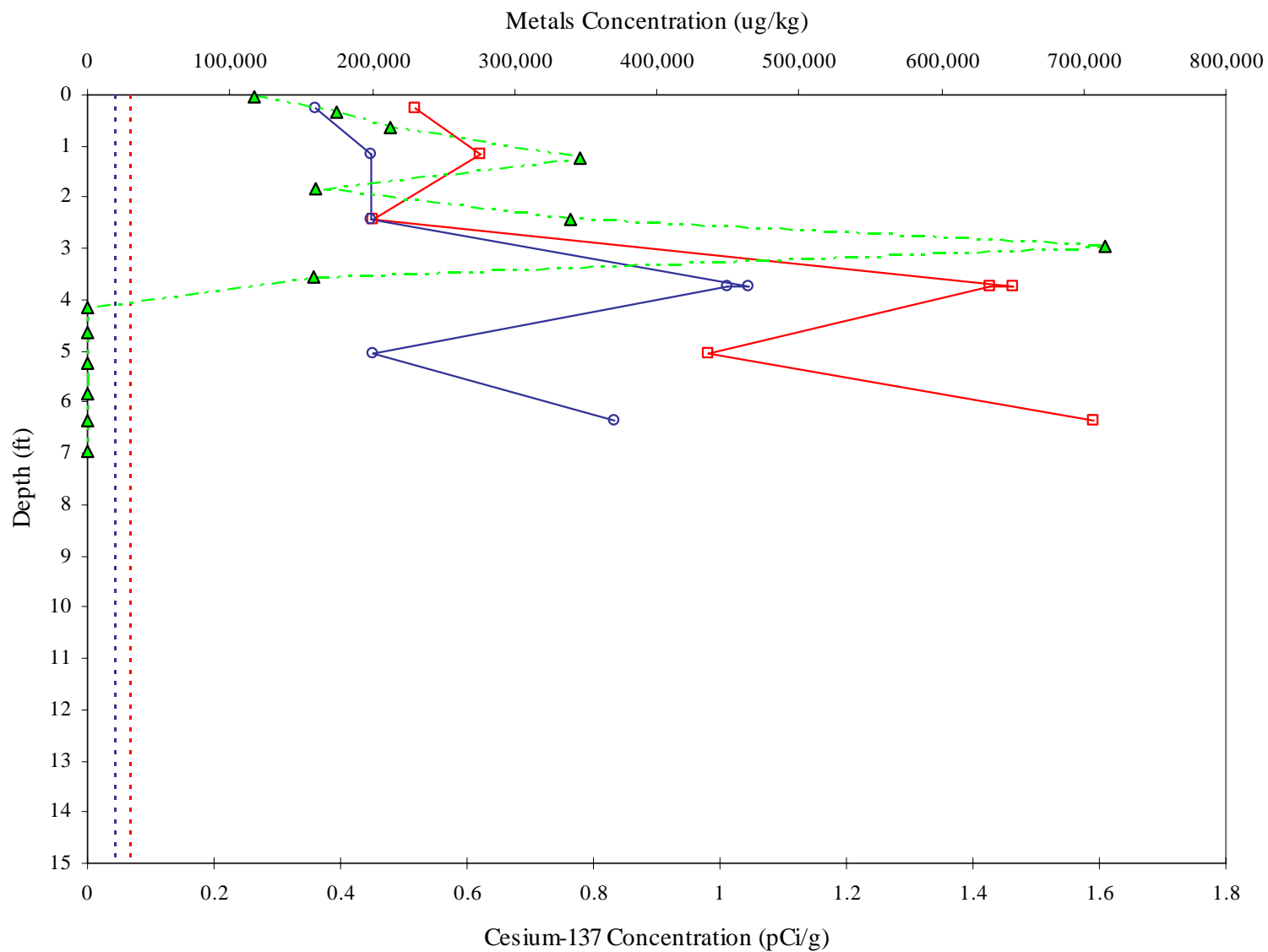




Downcore Profile for Copper and Chromium  
(River Mile 6.4)  
*Lower Passaic River Restoration Project*







#### Legend

- Copper Detect
- Chromium Detect
- ... Copper Background
- ... Chromium Background
- ▲- Cesium-137

#### Location

June 1995, River Mile 6.5  
TSI Location 275

#### Notes

Metals background concentrations were taken from Saunders, P. F., May 2003. "Ambient Levels of Metals in New Jersey Soils."

Available online:  
<http://www.state.nj.us/dep/dsr/research/ambient-levels-metal.pdf>



### Downcore Profile for Copper and Chromium (River Mile 6.5)

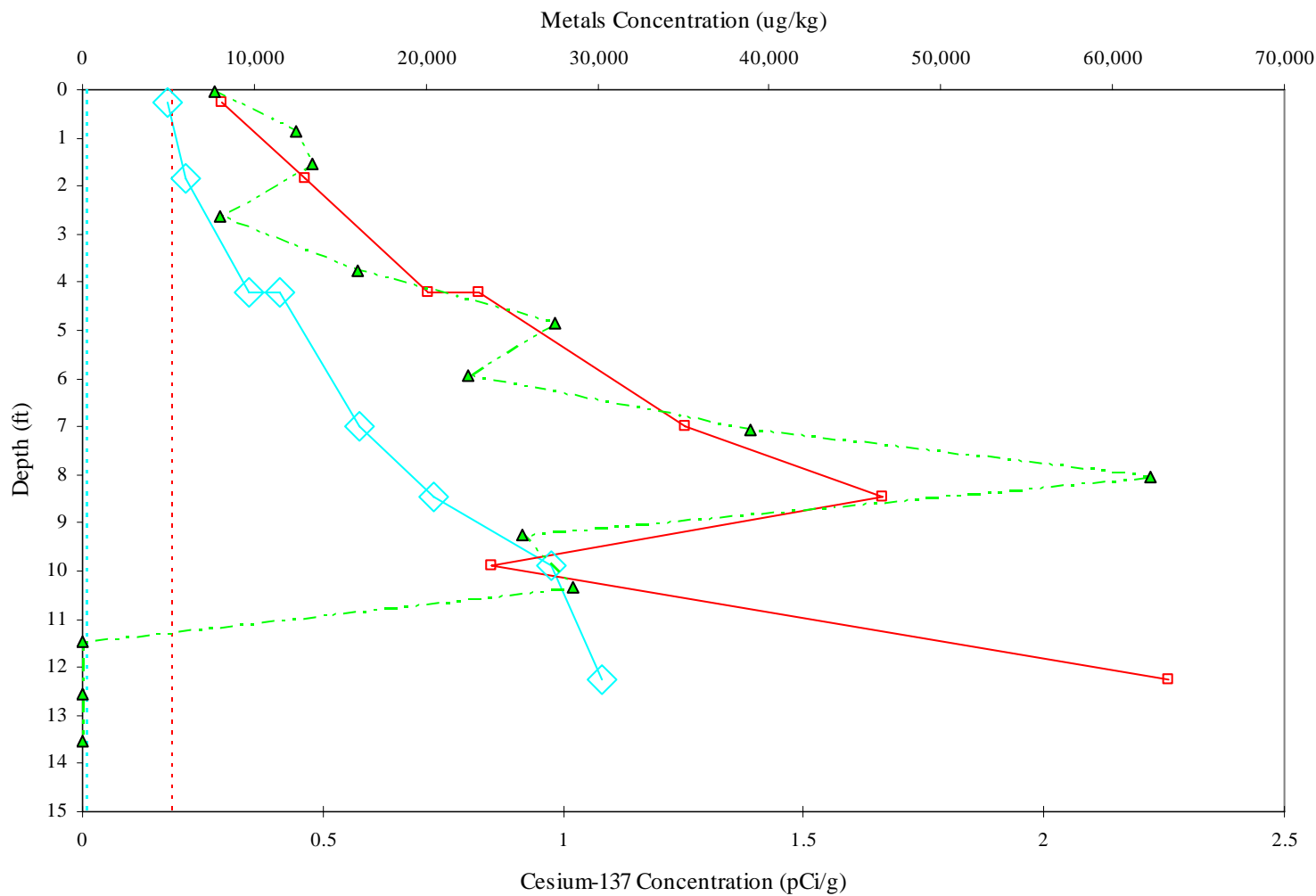
*Lower Passaic River Restoration Project*

Figure 13-32n

September 2008







#### Legend

- ◆— Cadmium Detect
- Arsenic Detect
- - - Cadmium Background
- - - Arsenic Background
- - -▲- - - Cesium-137

#### Location

April 1995, River Mile 2.7  
TSI Location 222

#### Notes

Metals background concentrations were taken from Sanders, P.F., May 2003. "Ambient Levels of Metals in New Jersey Soils."

Available online: <http://www.state.nj.us/dep/dsr/research/ambient-levels-metal.pdf>



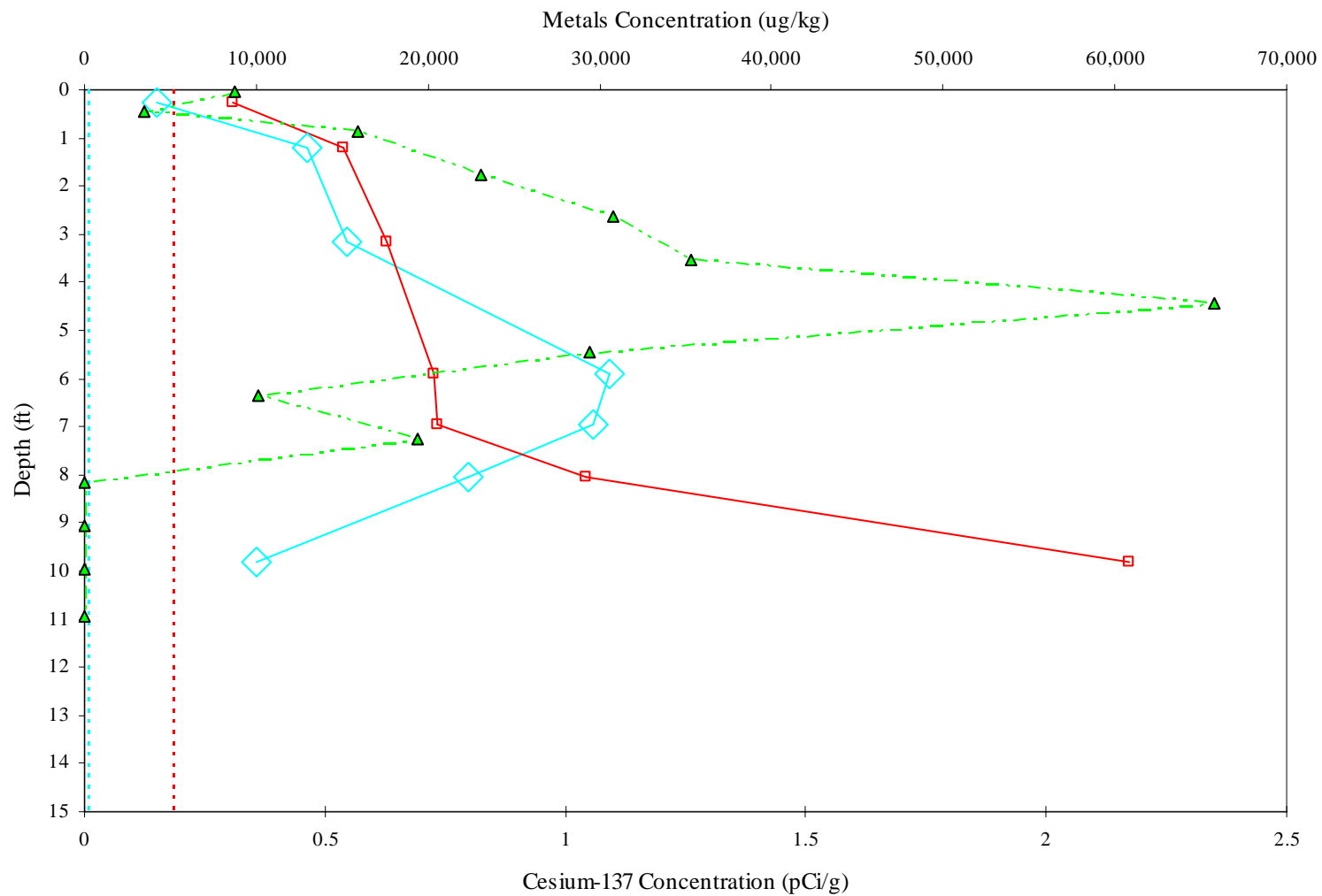
### Downcore Profile for Cadmium and Arsenic (River Mile 2.7)

*Lower Passaic River Restoration Project*

Figure 13-33b

September 2008





#### Legend

- ◆— Cadmium Detect
- Arsenic Detect
- - - Cadmium Background
- - - Arsenic Background
- - -▲- - - Cesium-137

#### Location

May 1995, River Mile 3.1  
TSI Location 228

#### Notes

Metals background concentrations were taken from Sanders, P.F., May 2003. "Ambient Levels of Metals in New Jersey Soils."

Available online: <http://www.state.nj.us/dep/dsr/research/ambient-levels-metal.pdf>



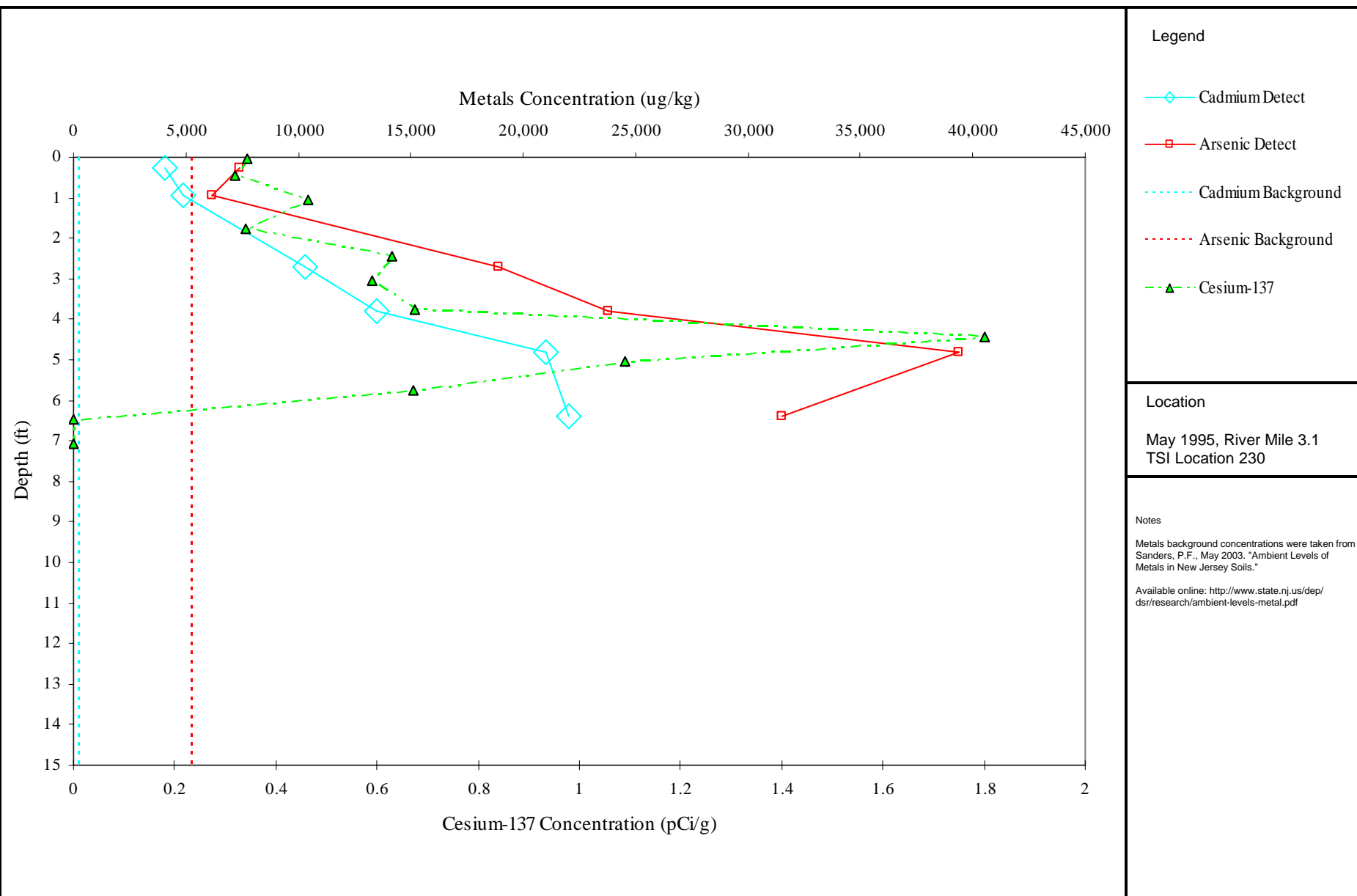
### Downcore Profile for Cadmium and Arsenic (River Mile 3.1)

*Lower Passaic River Restoration Project*

Figure 13-33c

September 2008





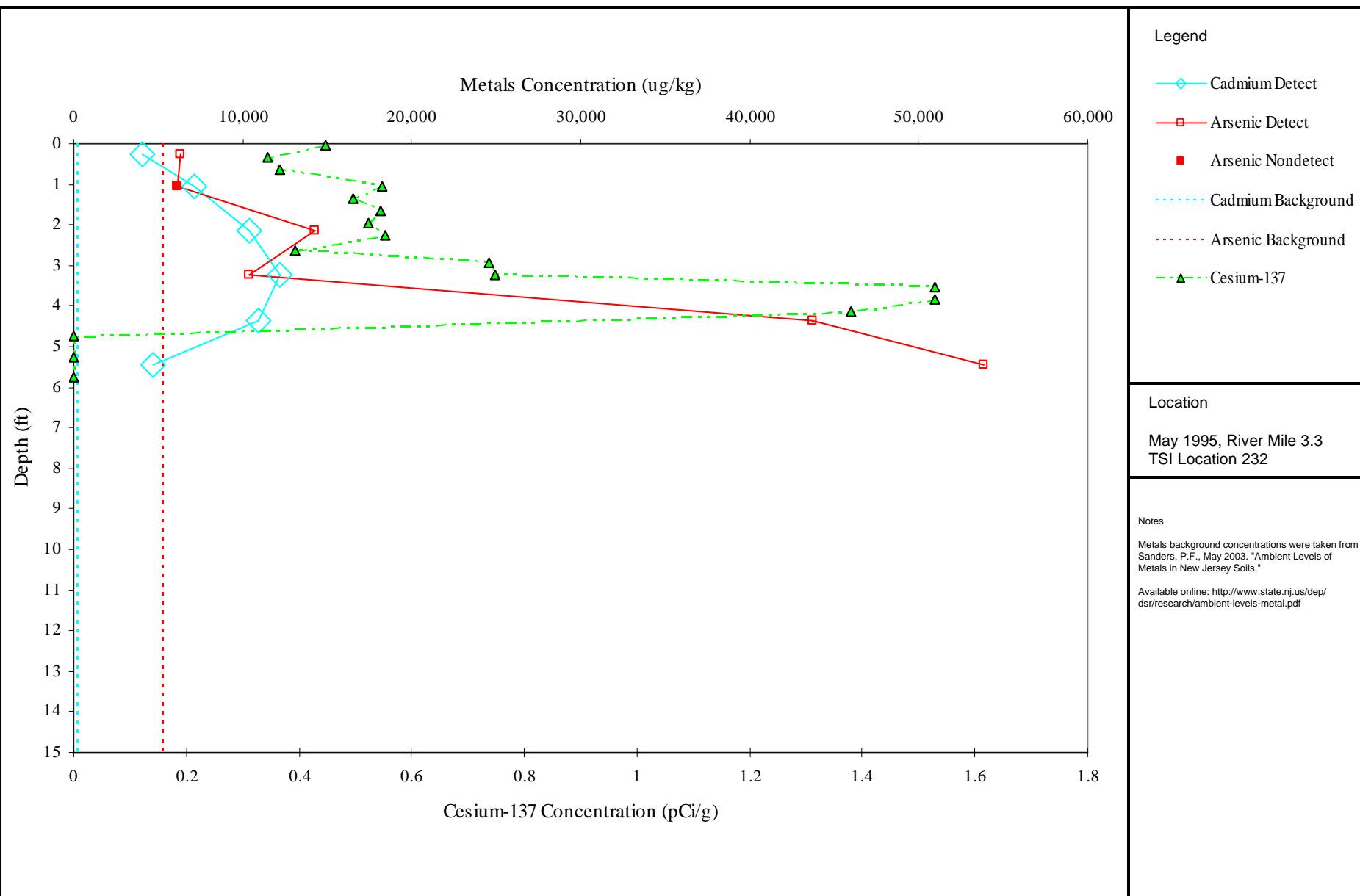
### Downcore Profile for Cadmium and Arsenic (River Mile 3.1)

Lower Passaic River Restoration Project

Figure 13-33d

September 2008





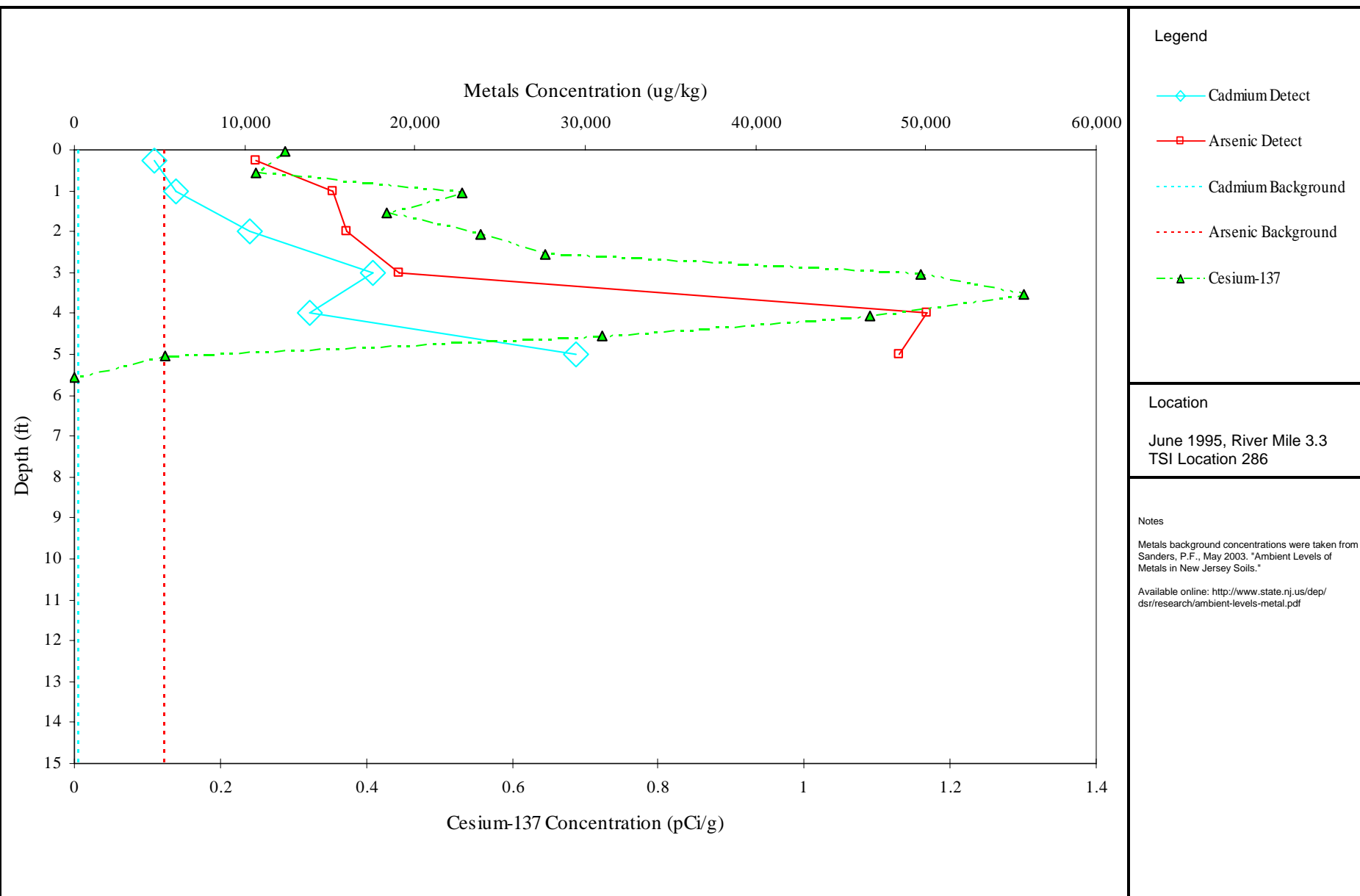
### Downcore Profile for Cadmium and Arsenic (River Mile 3.3)

Lower Passaic River Restoration Project

Figure 13-33e

September 2008





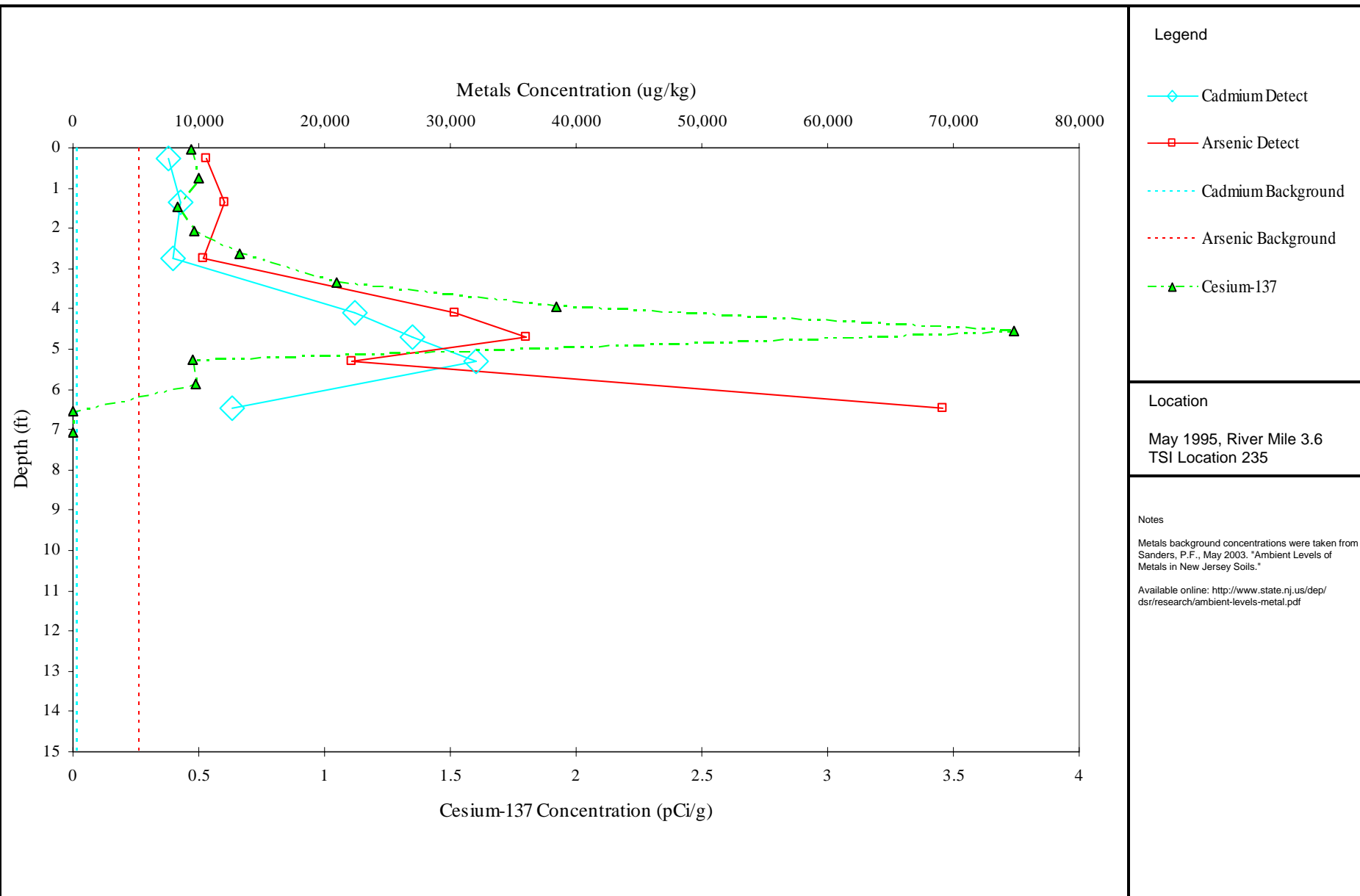
### Downcore Profile for Cadmium and Arsenic (River Mile 3.3)

Lower Passaic River Restoration Project

Figure 13-33f

September 2008





### Downcore Profile for Cadmium and Arsenic (River Mile 3.6)

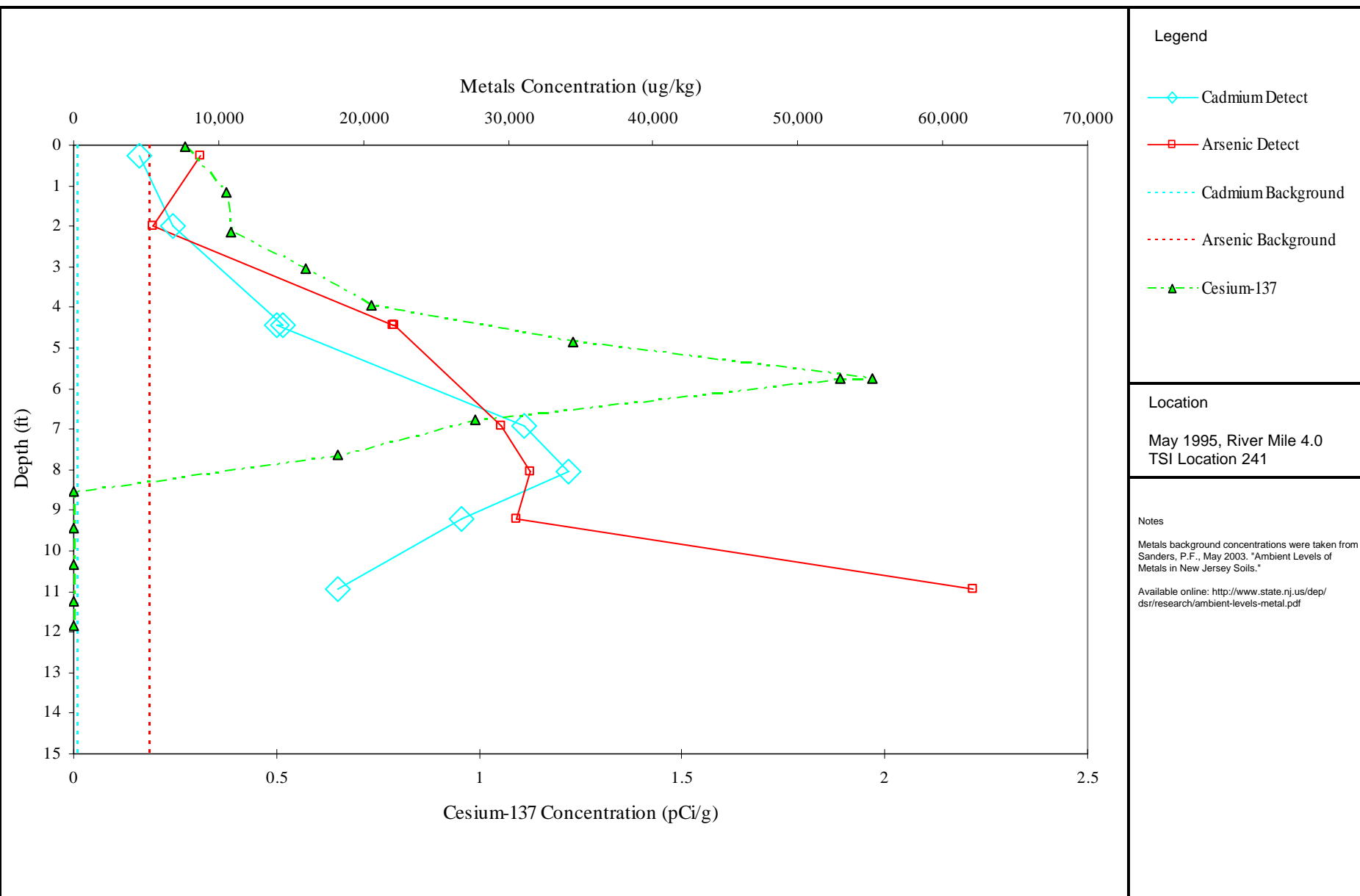
*Lower Passaic River Restoration Project*

Figure 13-33g

September 2008







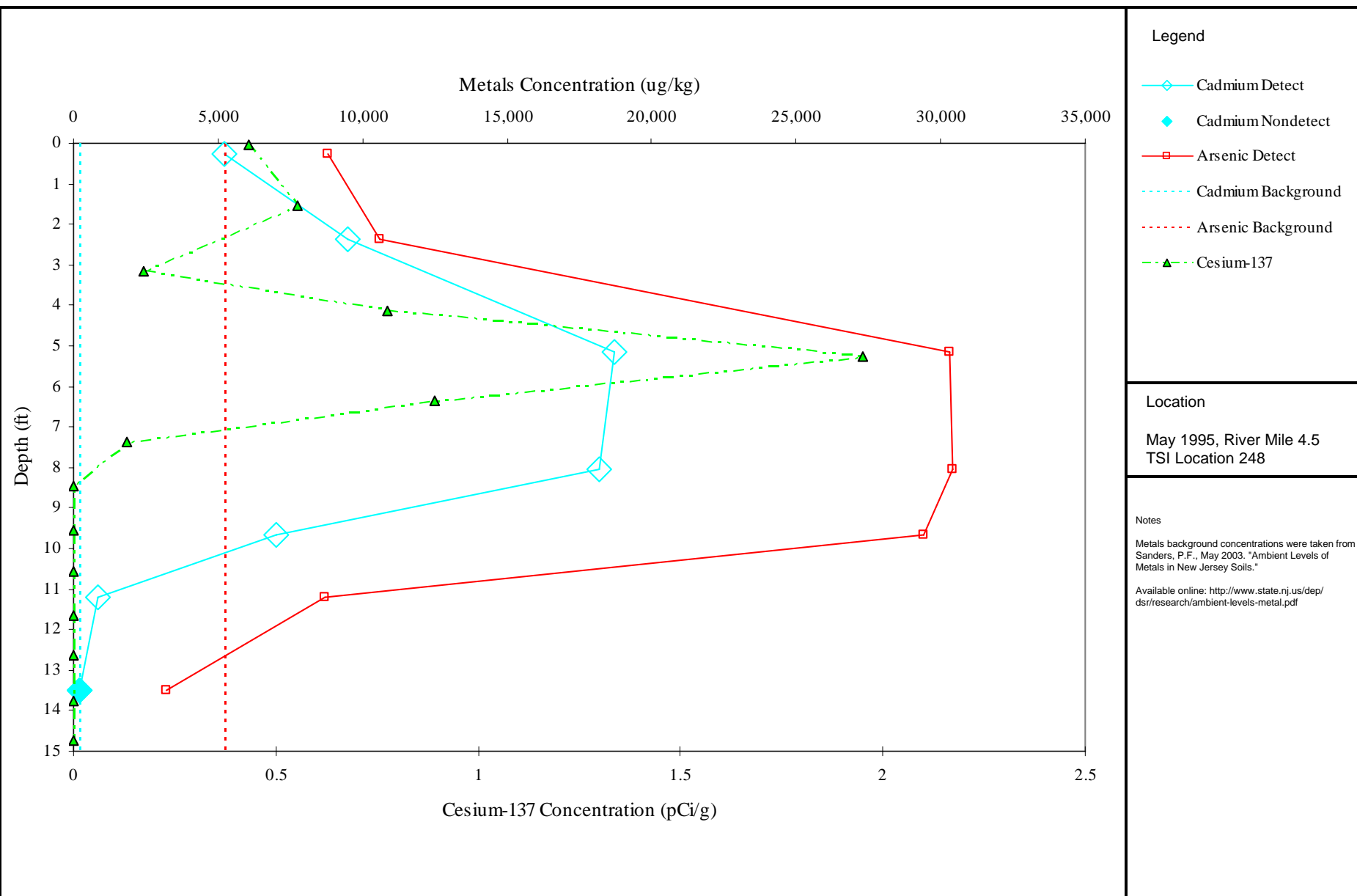
### Downcore Profile for Cadmium and Arsenic (River Mile 4.0)

*Lower Passaic River Restoration Project*

Figure 13-33h

September 2008





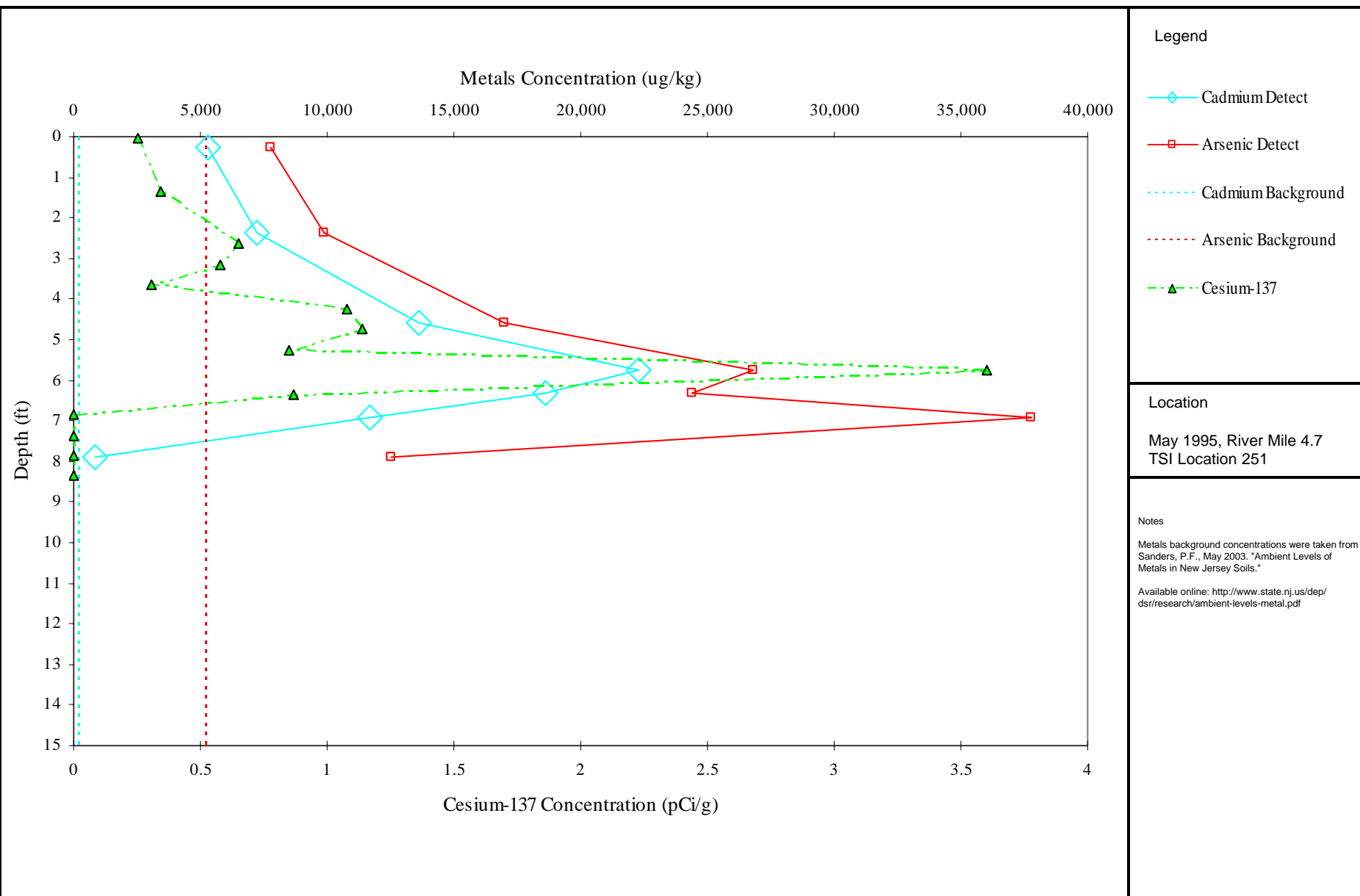
### Downcore Profile for Cadmium and Arsenic (River Mile 4.5)

Lower Passaic River Restoration Project

Figure 13-33i

September 2008





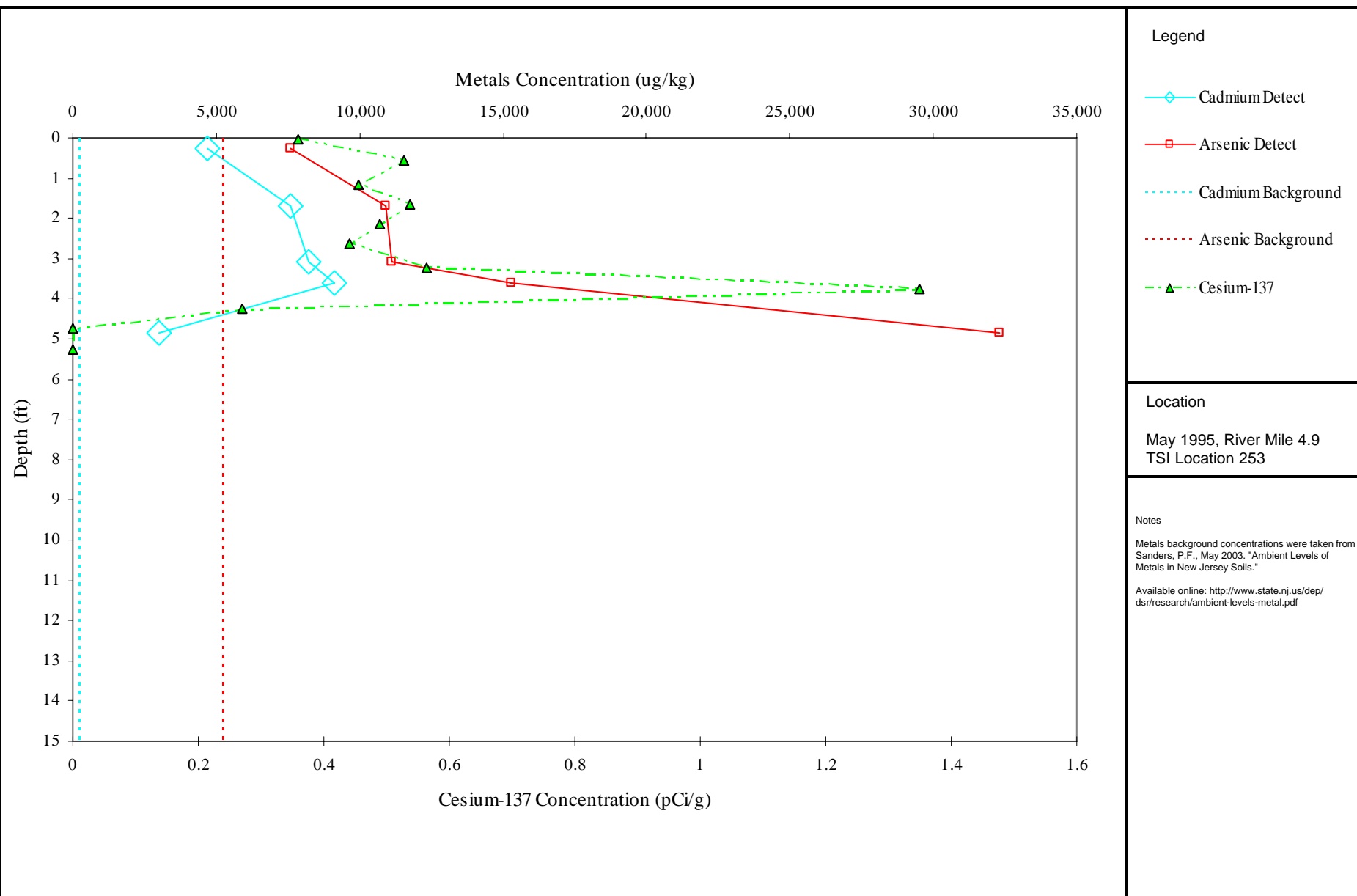
### Downcore Profile for Cadmium and Arsenic (River Mile 4.7)

*Lower Passaic River Restoration Project*

Figure 13-33j

September 2008





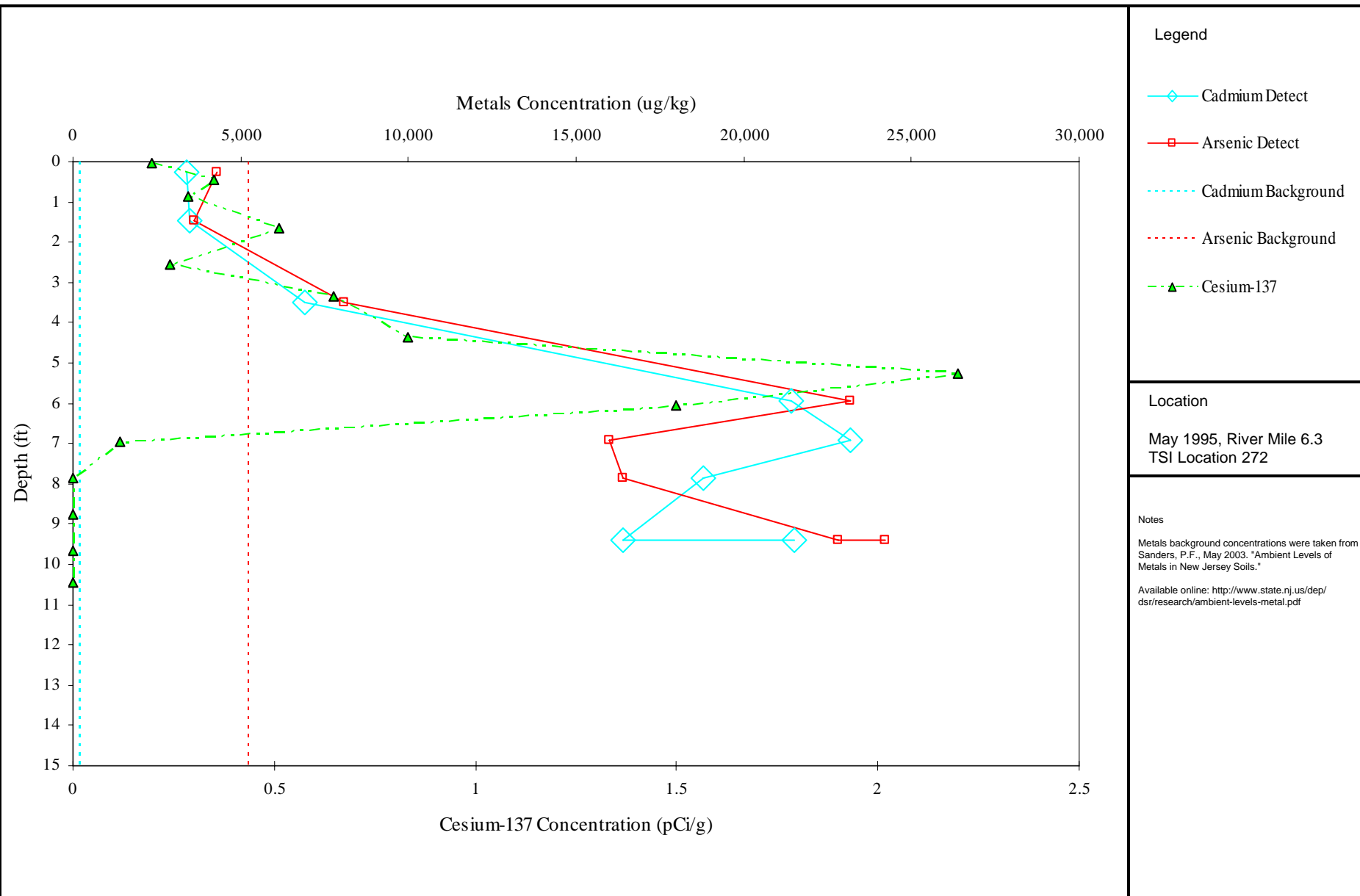
### Downcore Profile for Cadmium and Arsenic (River Mile 4.9)

*Lower Passaic River Restoration Project*

Figure 13-33k

September 2008





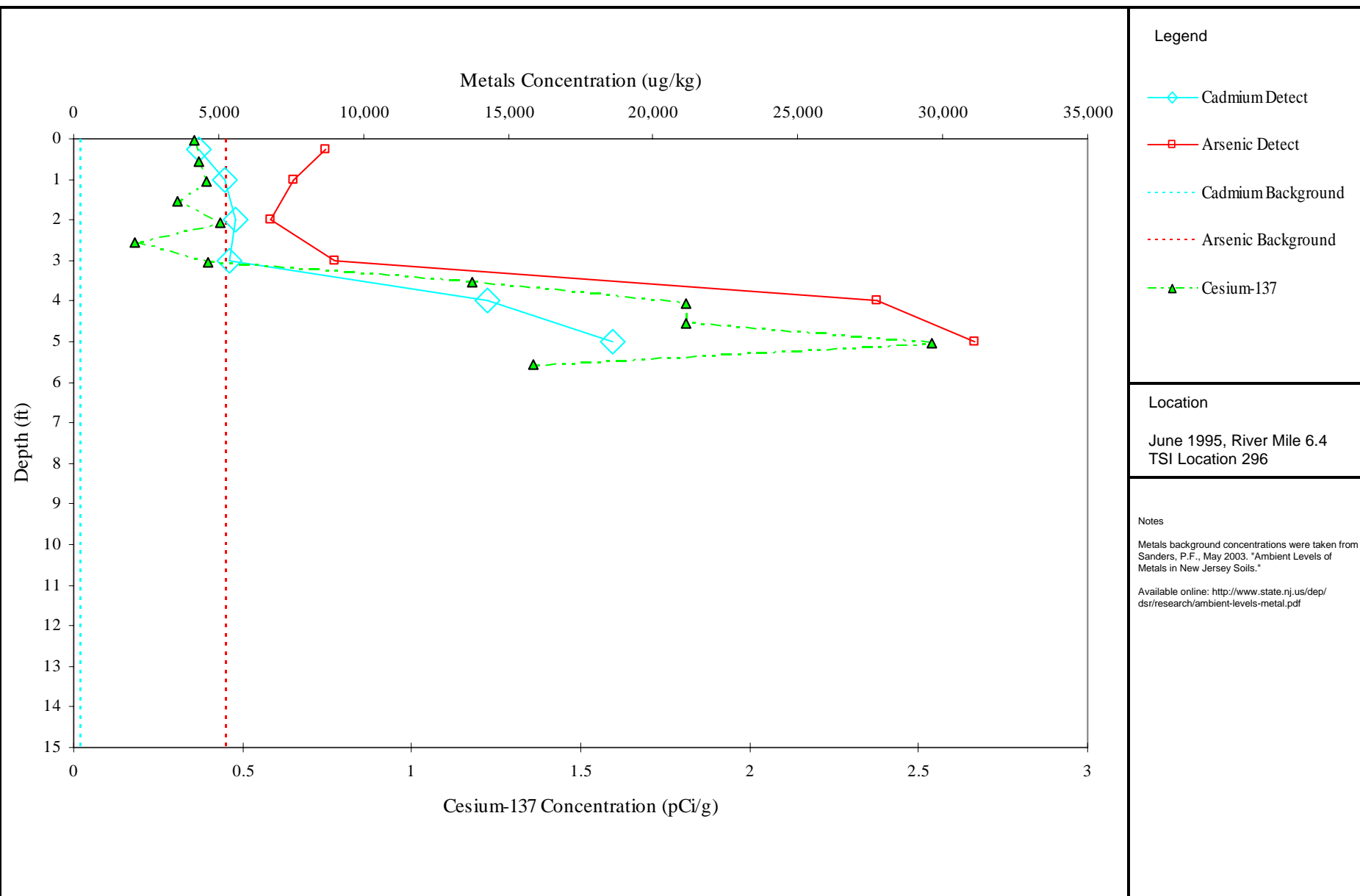
### Downcore Profile for Cadmium and Arsenic (River Mile 6.3)

*Lower Passaic River Restoration Project*

Figure 13-33I

September 2008





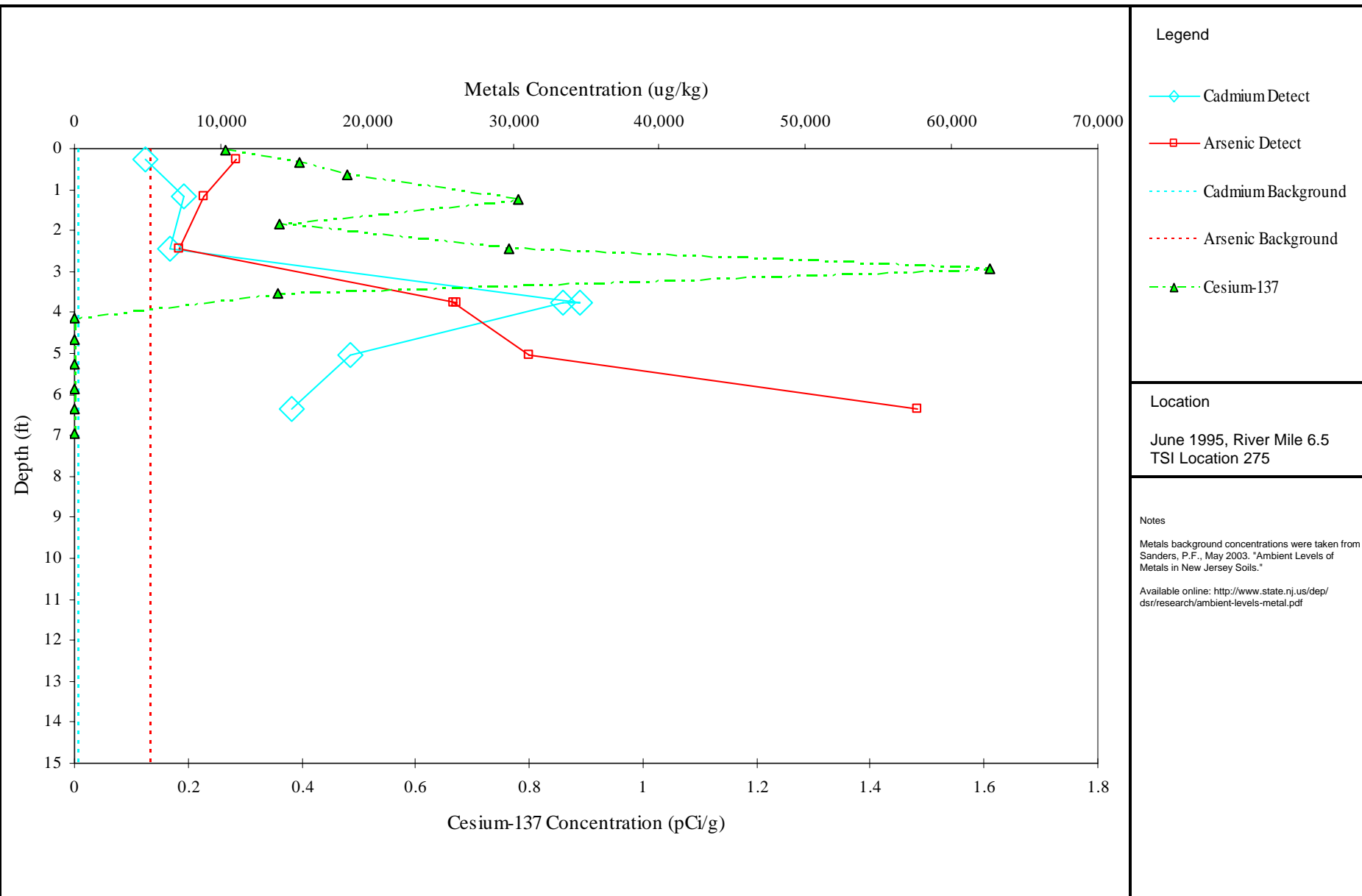
### Downcore Profile for Cadmium and Arsenic (River Mile 6.4)

*Lower Passaic River Restoration Project*

Figure 13-33m

September 2008





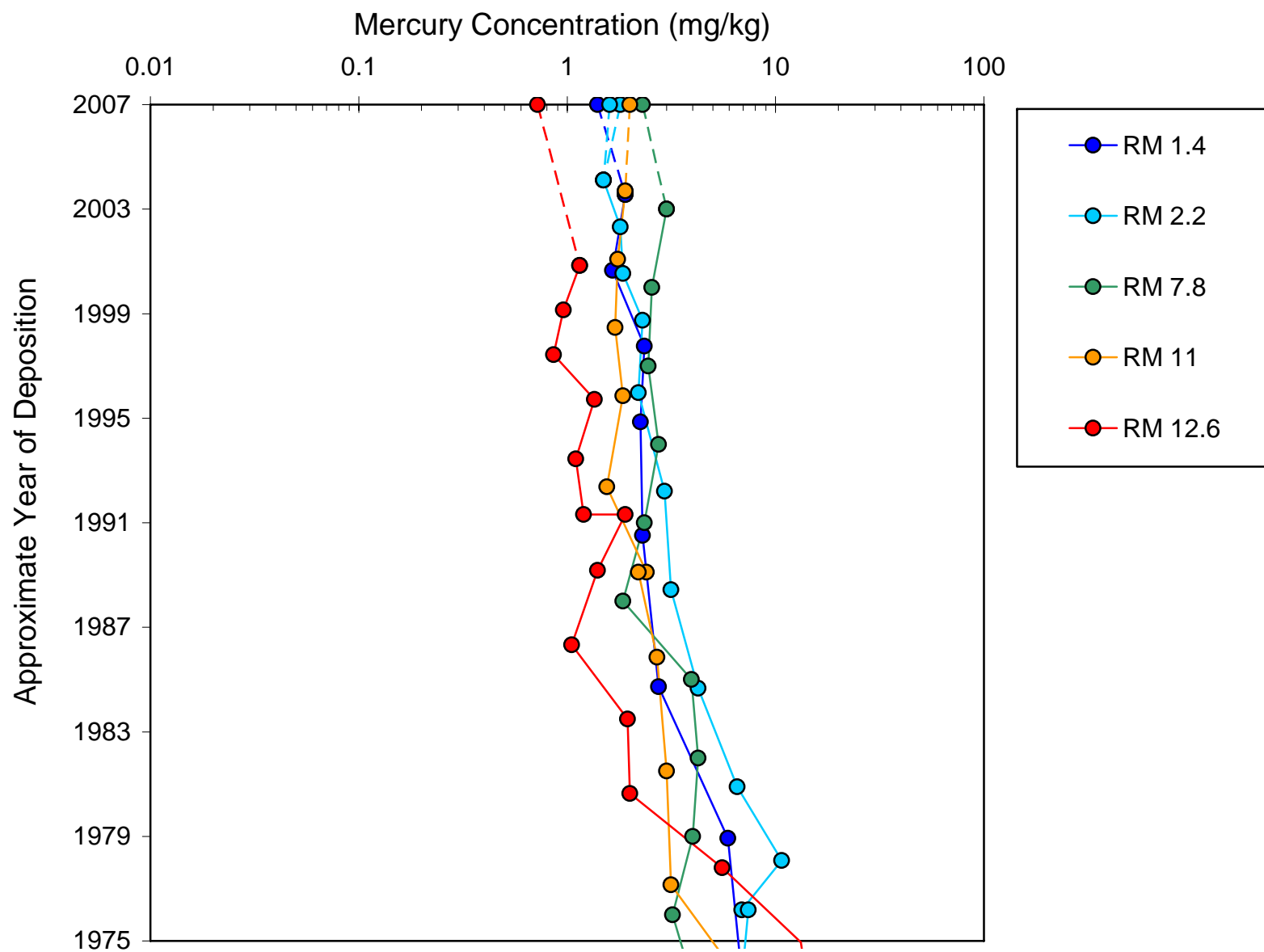
### Downcore Profile for Cadmium and Arsenic (River Mile 6.5)

*Lower Passaic River Restoration Project*

Figure 13-33n

September 2008



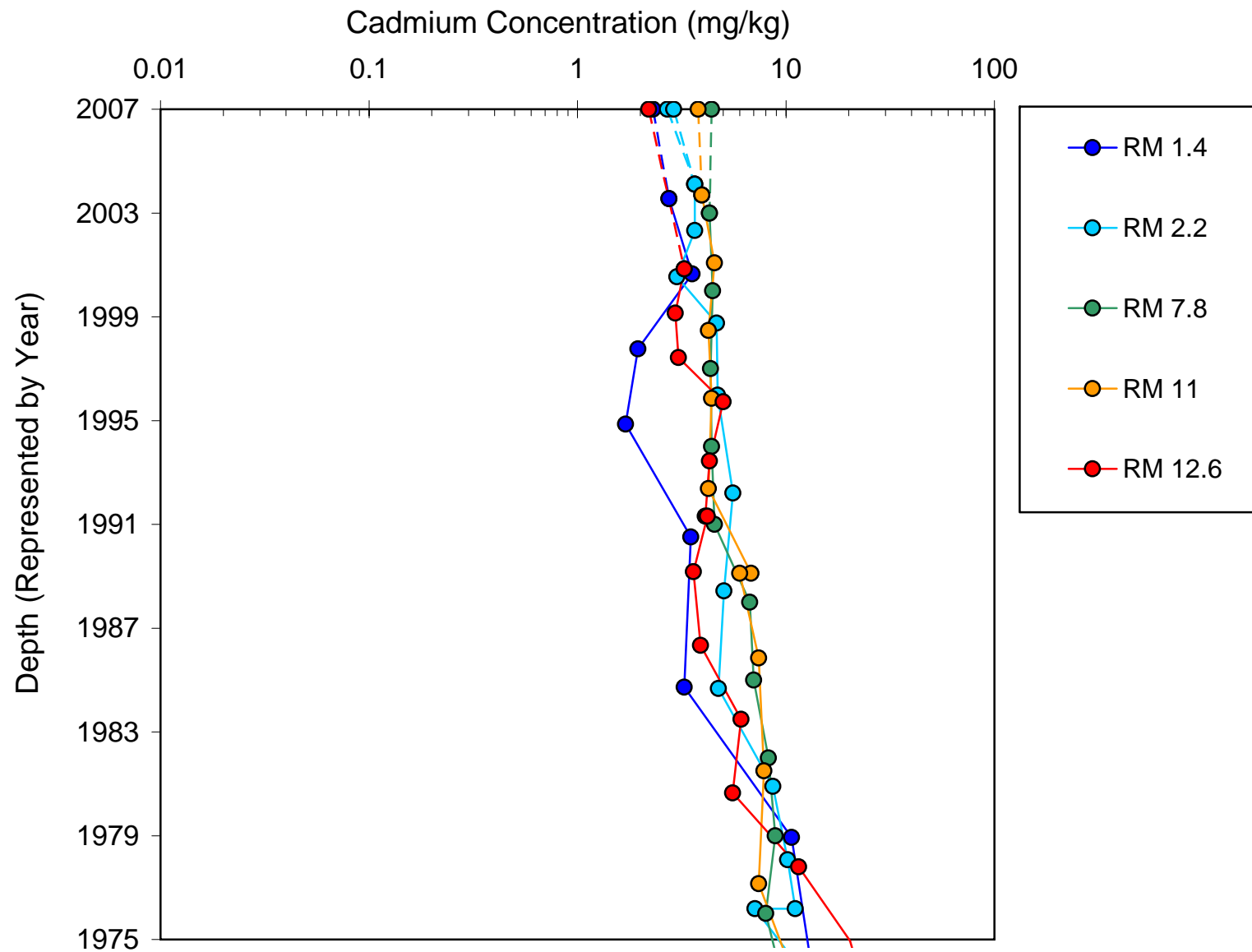


**Mercury Downcore Profile**  
*Lower Passaic River Restoration Project*

Figure 13-34a

September 2008

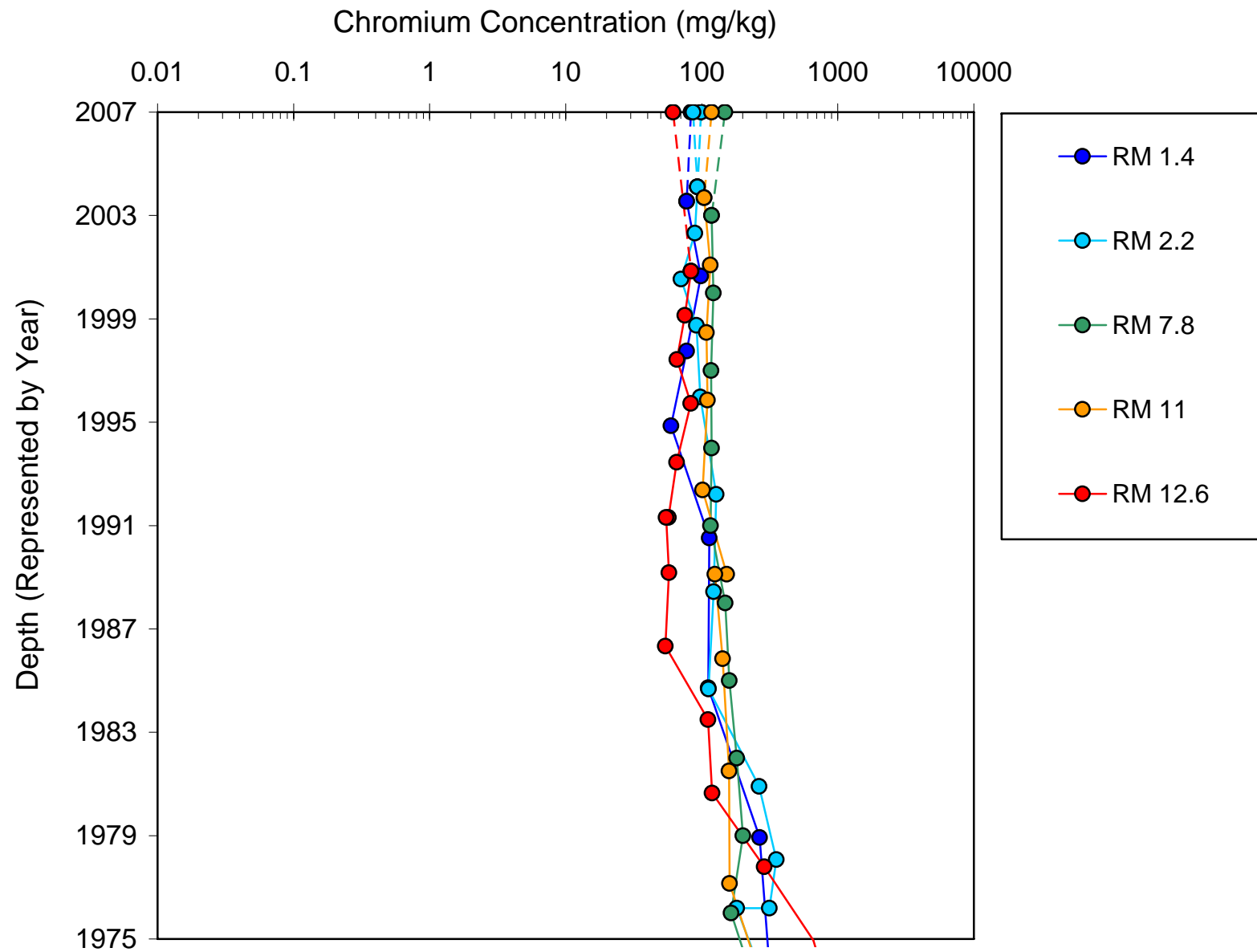




**Cadmium Downcore Profile**  
*Lower Passaic River Restoration Project*

Figure 13-34b

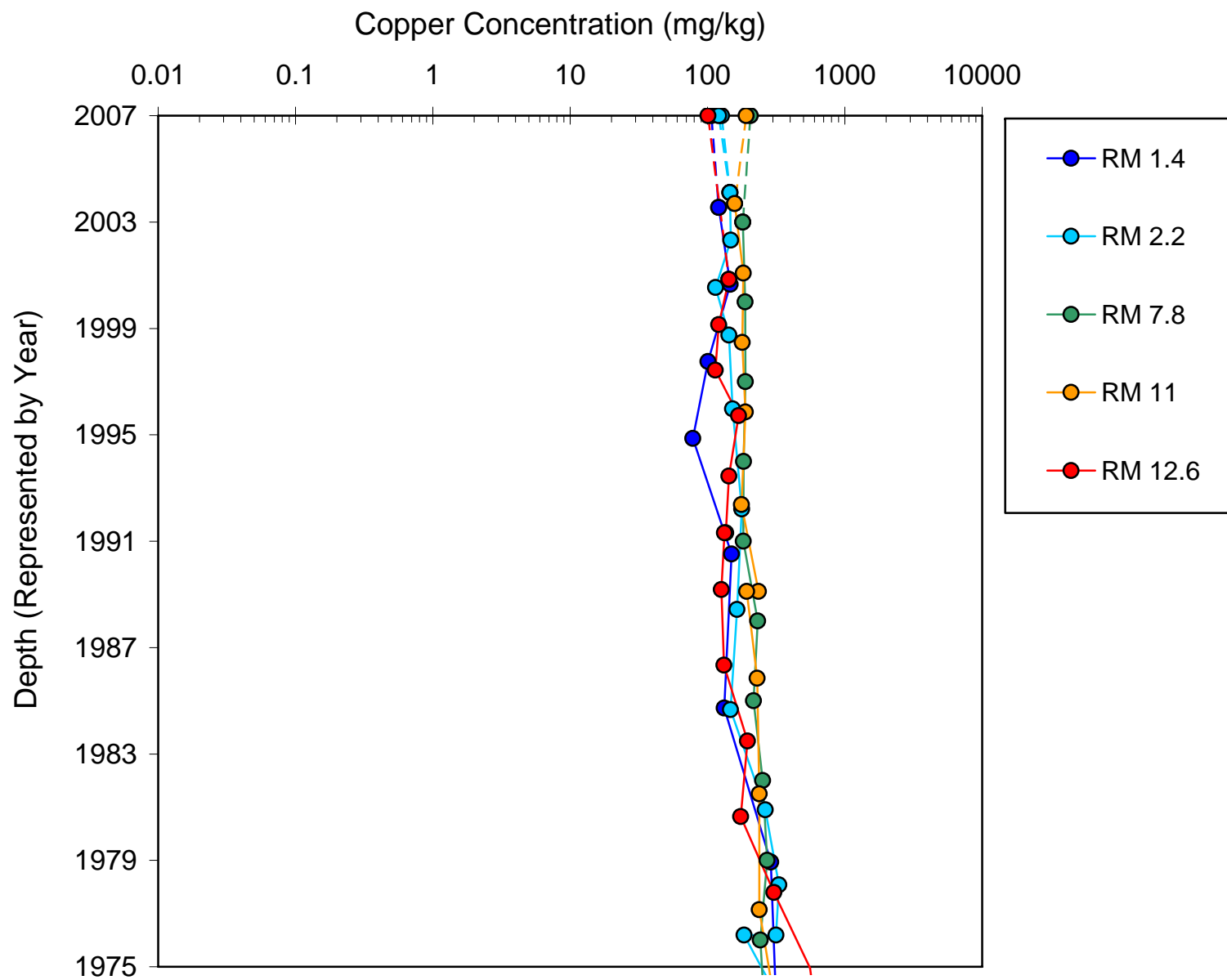
September 2008



Chromium Downcore Profile  
Lower Passaic River Restoration Project

Figure 13-34c

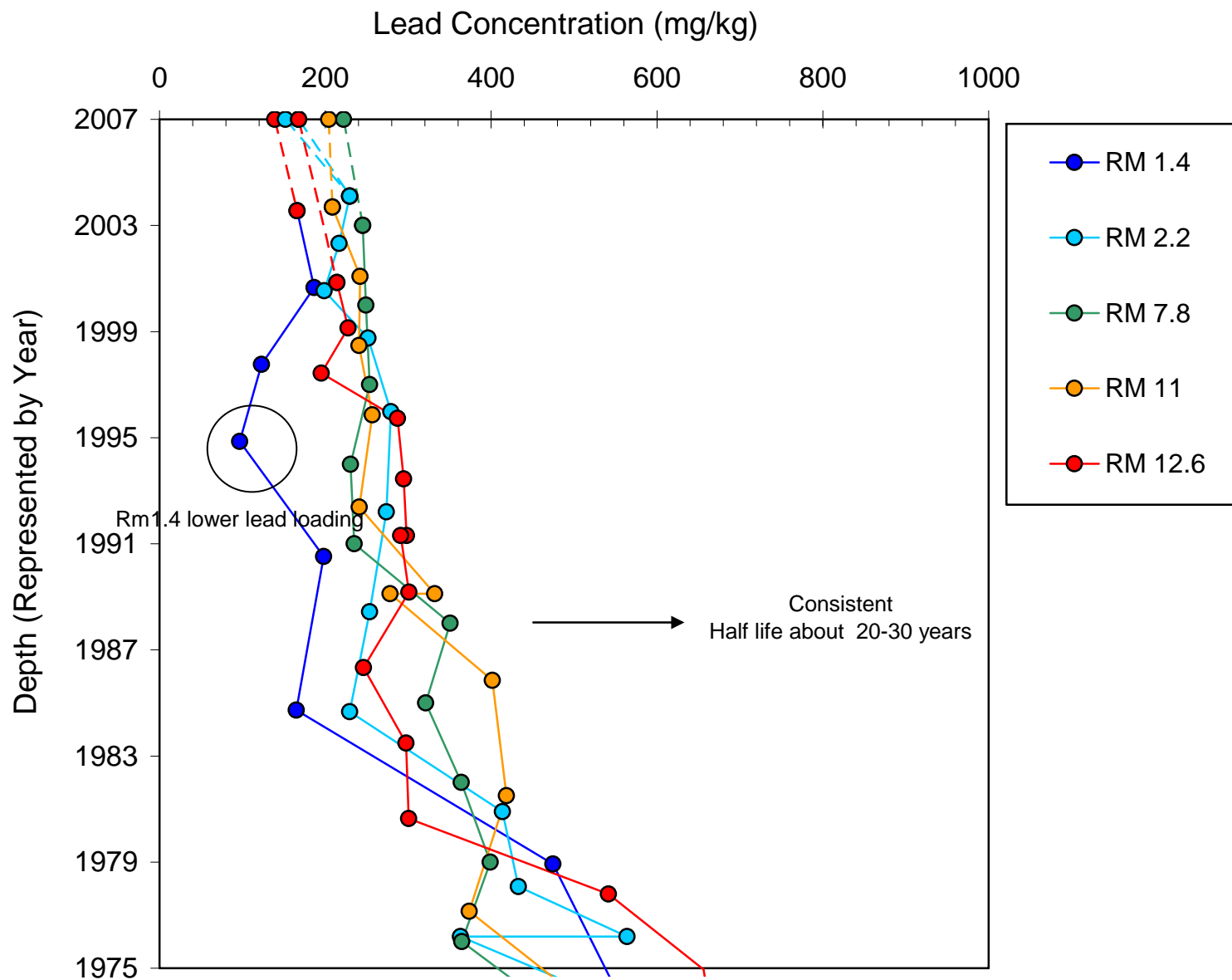
September 2008



**Copper Downcore Profile**  
*Lower Passaic River Restoration Project*

Figure 13-34d

September 2008

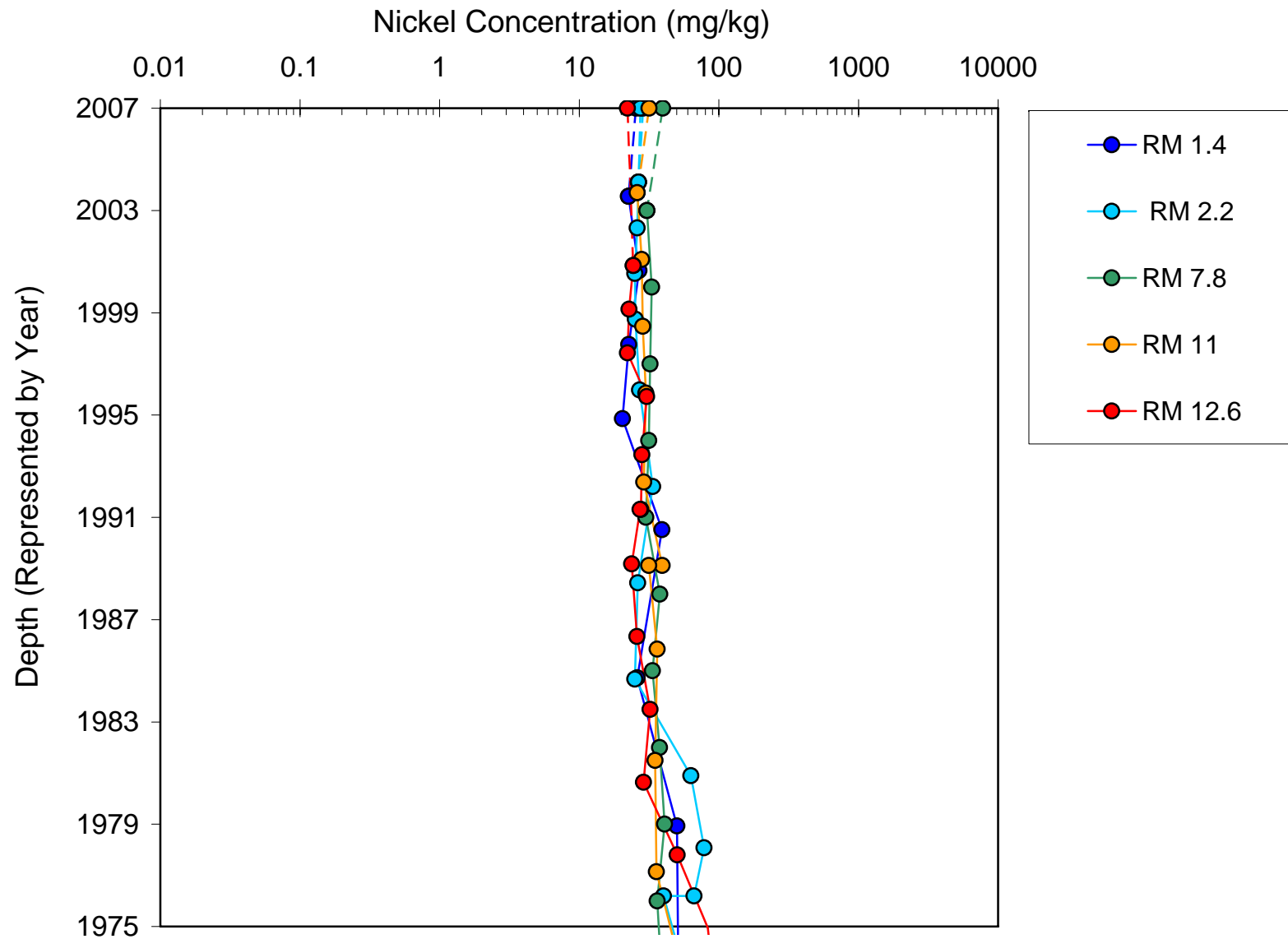


### Lead Downcore Profile

Lower Passaic River Restoration Project

Figure 13-34e

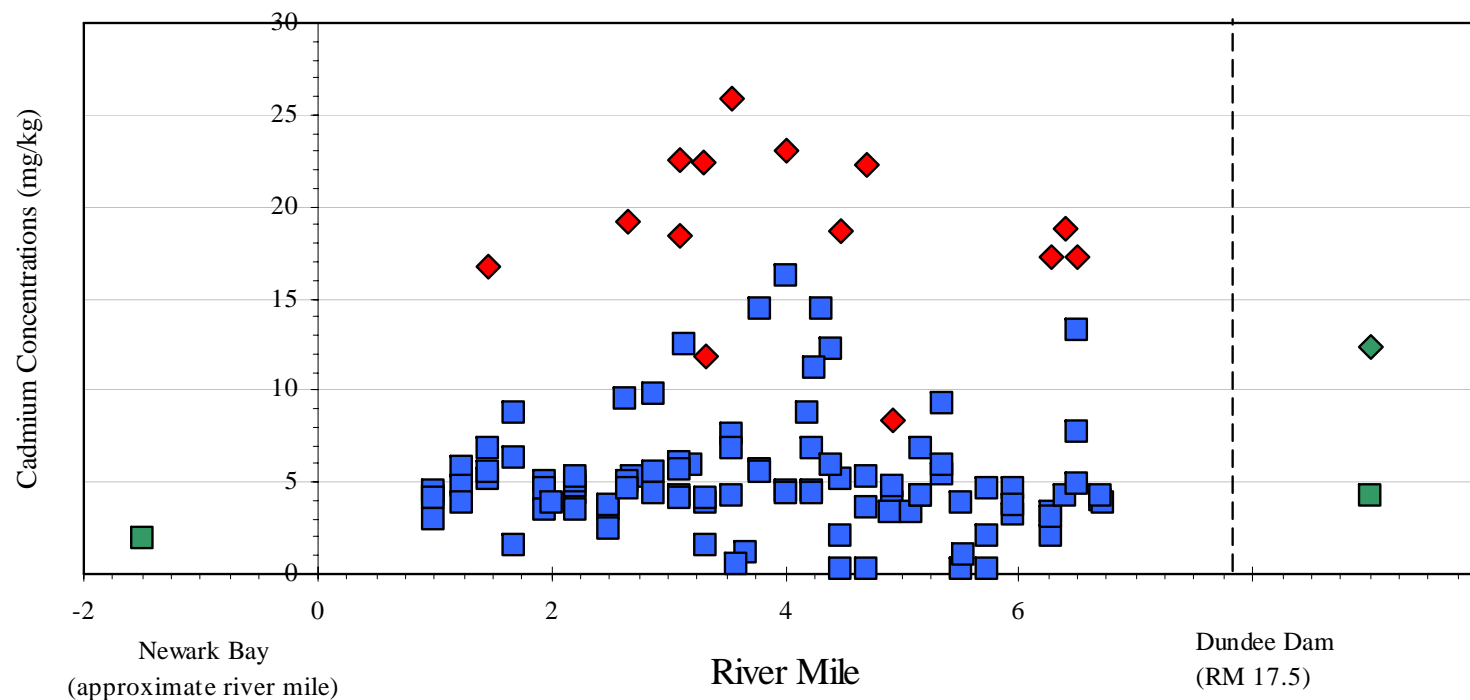
September 2008



Nickel Downcore Profile  
Lower Passaic River Restoration Project

Figure 13-34f

September 2008



#### Legend

- ◆ Tierra Solutions, Inc. (1963)
- Tierra Solutions, Inc. (1995)
- ◆ Bopp et al., 2006 (1963)
- Bopp et al., 2006 (1986-1995)

#### Location

#### Notes

**Tierra Solutions Inc. Data Source:**  
PASSAIC 1995 RI Sampling Program (14 of the 95 locations for 1963; all locations for 1995), Tierra Solutions, Inc. 1963 concentrations were calculated via interpolation at the depth corresponding to the cesium-137 peak

Surface concentrations are from a depth of 0 to <1 foot

Non-detect (lab qualifier containing a U) plotted as half the reported value

**Bopp et al., 2006 Data Source:**  
Contaminant Chronologies from Hudson River Sedimentary Records, Bopp et al.

Concentration at 1963 obtained from analysis of discrete core sections corresponding to the cesium-137 peak.

Surface concentrations are from a depth of 0 to <1 foot



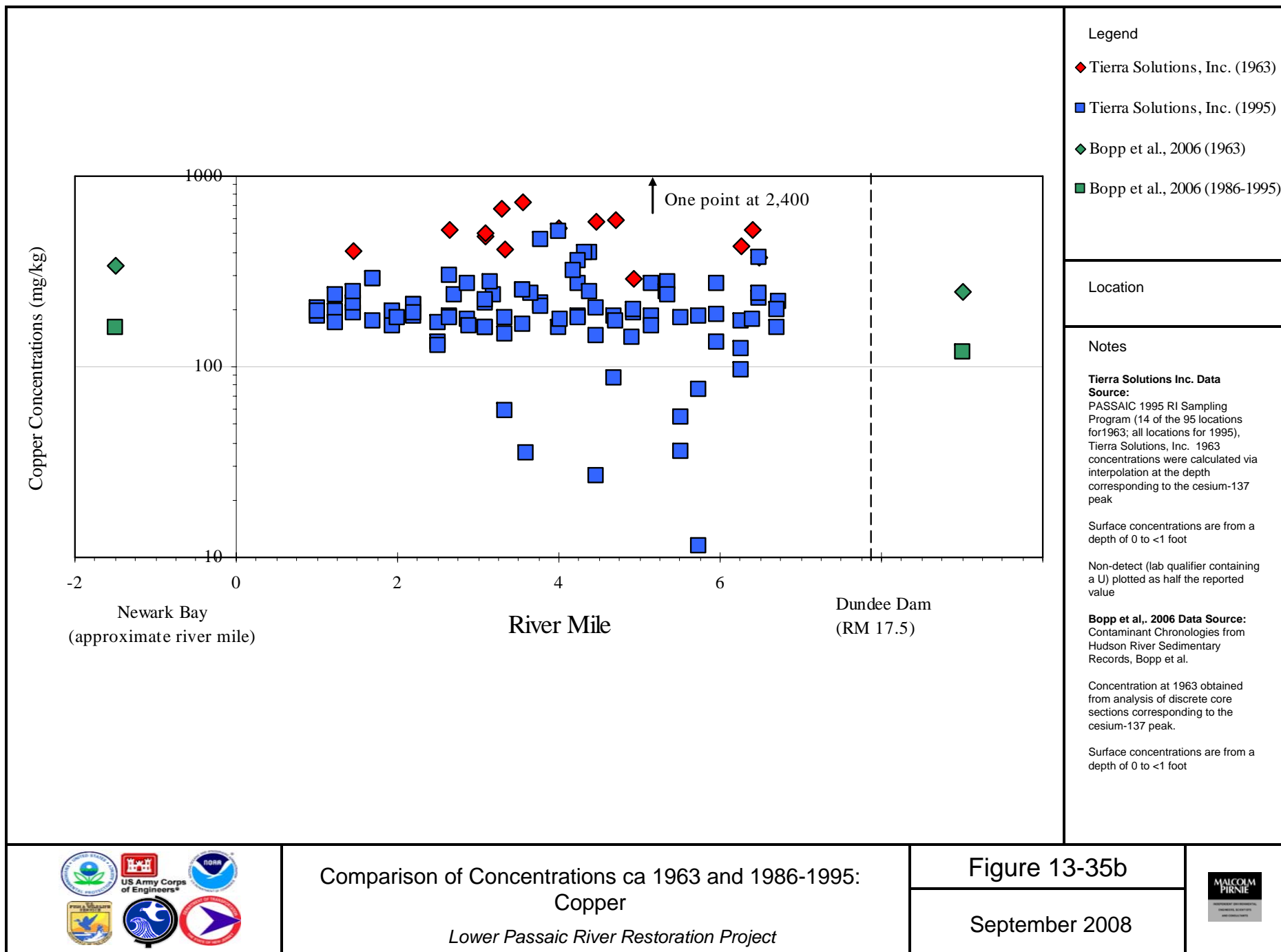
## Comparison of Concentrations ca 1963 and 1986-1995: Cadmium

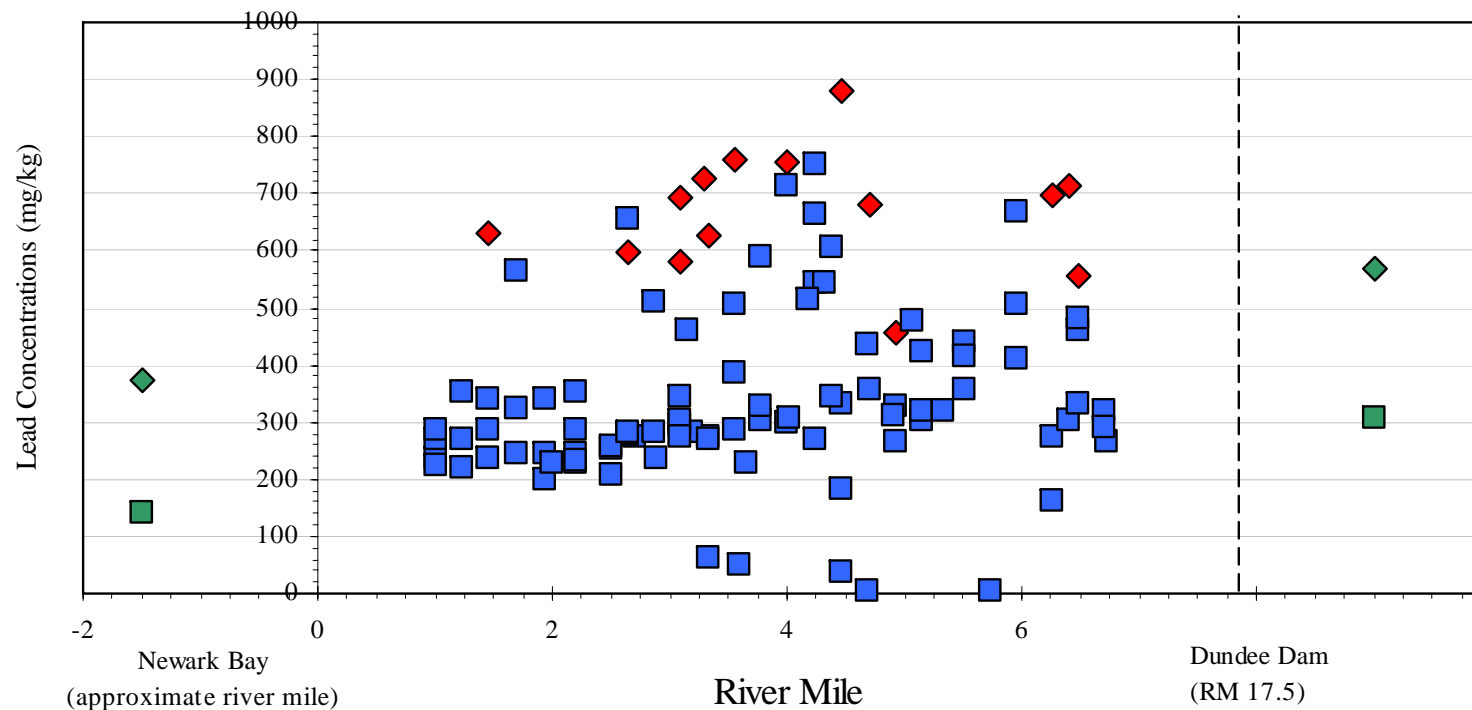
*Lower Passaic River Restoration Project*

Figure 13-35a

September 2008







#### Legend

- ◆ Tierra Solutions, Inc. (1963)
- Tierra Solutions, Inc. (1995)
- ◆ Bopp et al., 2006 (1963)
- Bopp et al., 2006 (1986-1995)

#### Location

#### Notes

**Tierra Solutions Inc. Data Source:**  
PASSAIC 1995 RI Sampling Program (14 of the 95 locations for 1963; all locations for 1995),  
Tierra Solutions, Inc. 1963 concentrations were calculated via interpolation at the depth corresponding to the cesium-137 peak

Surface concentrations are from a depth of 0 to <1 foot

Non-detect (lab qualifier containing a U) plotted as half the reported value

**Bopp et al., 2006 Data Source:**  
Contaminant Chronologies from Hudson River Sedimentary Records, Bopp et al.

Concentration at 1963 obtained from analysis of discrete core sections corresponding to the cesium-137 peak.

Surface concentrations are from a depth of 0 to <1 foot



## Comparison of Concentrations ca 1963 and 1986-1995: Lead

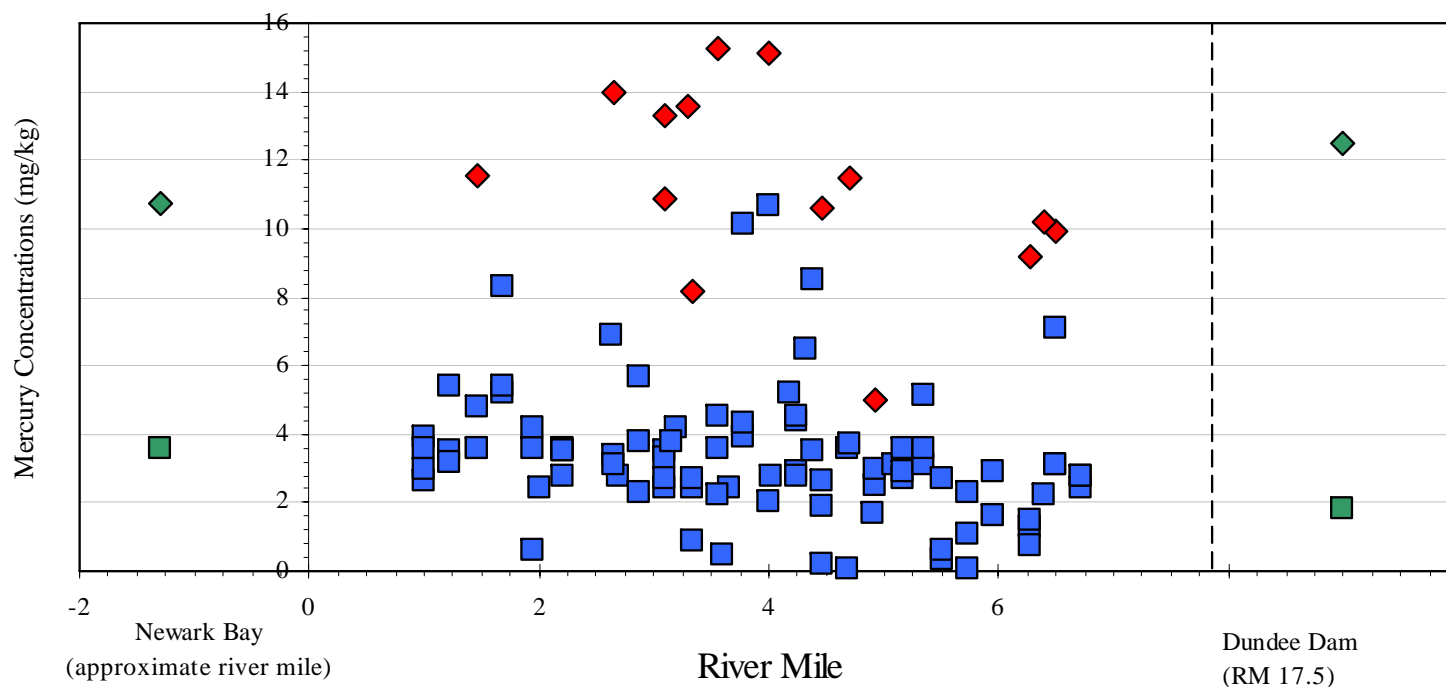
*Lower Passaic River Restoration Project*

Figure 13-35c

September 2008







#### Legend

- ◆ Tierra Solutions, Inc. (1963)
- Tierra Solutions, Inc. (1995)
- ◆ Bopp et al., 2006 (1963)
- Bopp et al., 2006 (1986-1995)

#### Location

#### Notes

**Tierra Solutions Inc. Data Source:**  
PASSAIC 1995 RI Sampling Program (14 of the 95 locations for 1963; all locations for 1995),  
Tierra Solutions, Inc. 1963 concentrations were calculated via interpolation at the depth corresponding to the cesium-137 peak

Surface concentrations are from a depth of 0 to <1 foot

Non-detect (lab qualifier containing a U) plotted as half the reported value

**Bopp et al., 2006 Data Source:**  
Contaminant Chronologies from Hudson River Sedimentary Records, Bopp et al.

Concentration at 1963 obtained from analysis of discrete core sections corresponding to the cesium-137 peak.

Surface concentrations are from a depth of 0 to <1 foot



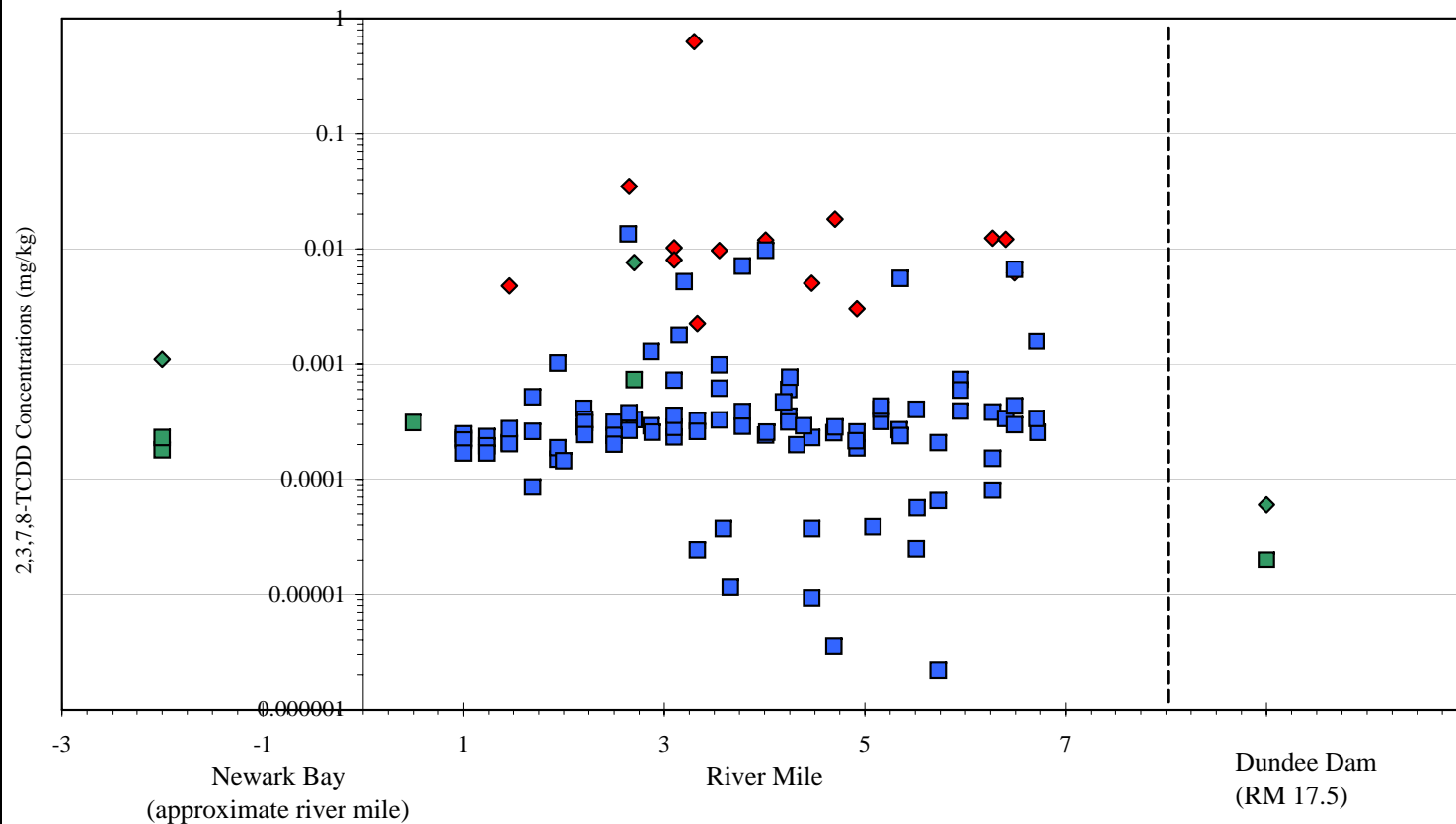
## Comparison of Concentrations ca 1963 and 1986-1995: Mercury

*Lower Passaic River Restoration Project*

Figure 13-35d

September 2008





### Legend

- ◆ Tierra Solutions, Inc. (1963)
- Tierra Solutions, Inc. (1995)
- ◆ Bopp et al., 1991a, 1991b (1963)
- Bopp et al., 1991a, 1991b (1985-1986)

### Location

### Notes

**Tierra Solutions Inc. Data Source:**  
PASSAIC 1995 RI Sampling Program (14 of the 95 locations), Tierra Solutions, Inc.

Interpolated concentrations calculated at the depth corresponding to the cesium-137 peak

Non-detect (lab qualifier containing a U) plotted as half the reported detection limit

Surface concentrations are from a depth of 0 to <1 foot

**Bopp et al., 1991a Data Source:**  
Sediment Sampling and Radionuclide and Chlorinated Hydrocarbon Analysis in Newark Bay and the Hackensack and Passaic Rivers, Bopp et al.

**Bopp et al., 1991b Data Source:**  
EST 25(J): 951 - 956.

Non-detect (reported as 60 ng/kg) above Dundee Dam plotted as 0.00006 ug/kg

Surface concentrations are from a depth of 0 to <1 foot



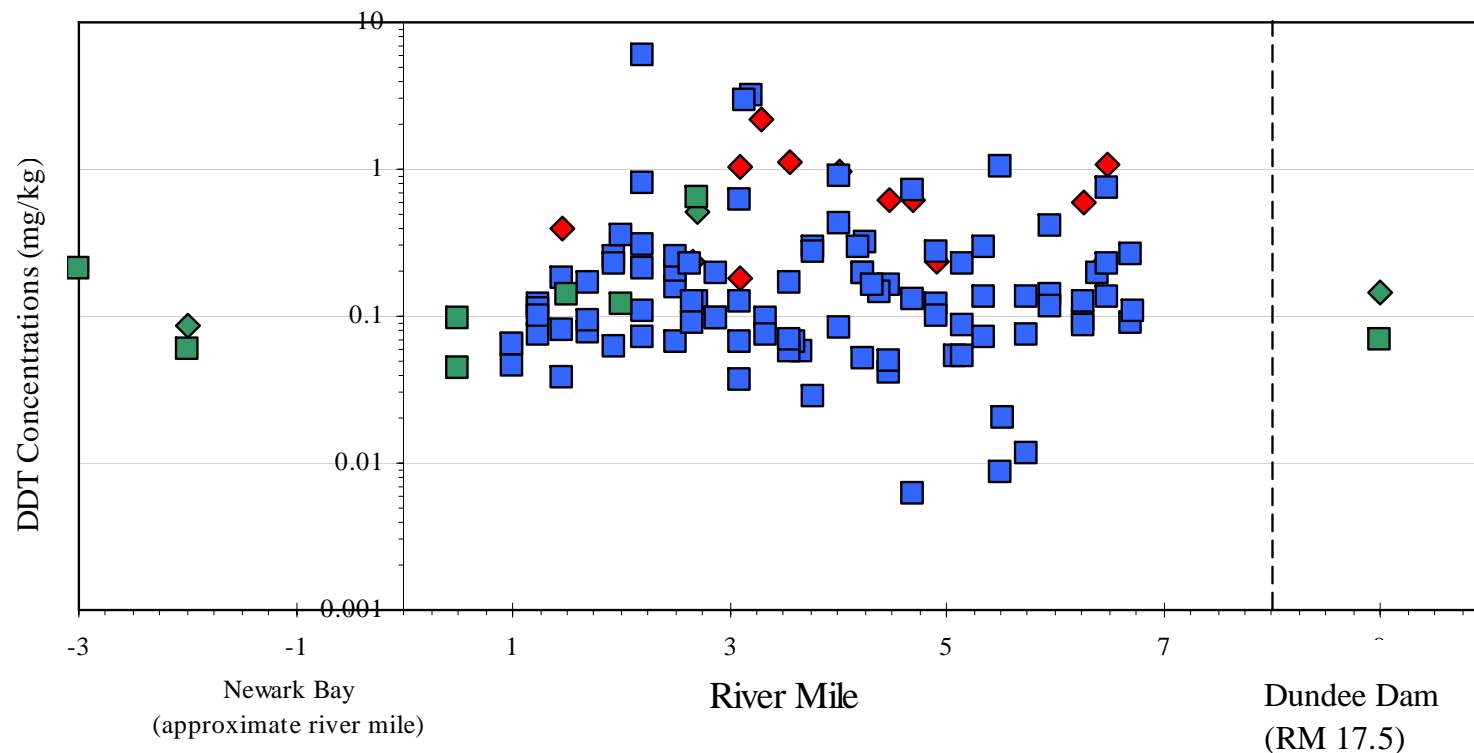
## Comparison of 2,3,7,8-TCDD Concentrations in 1963, 1985, 1986, and 1995

Lower Passaic River Restoration Project

Figure 13-35e

September 2008





#### Legend

- ◆ Tierra Solutions, Inc. (1963)
- Tierra Solutions, Inc. (1995)
- ◆ Bopp et al., 1991a (1963)
- Bopp et al., 1991a (1985-1986)

#### Location

#### Notes

**Tierra Solutions Inc. Data Source:**  
PASSAIC 1995 RI Sampling Program (14 of the 95 locations), Tierra Solutions, Inc.

Interpolated concentrations calculated at the depth corresponding to the cesium-137 peak

Total DDT represents the sum of the three 4,4' isomers wherever possible.

Nondetected values were incorporated into the sum as half the reported detection limit.

Surface concentrations are from a depth of 0 to <1 foot

**Bopp et al., 1991a Data Source:**  
Sediment Sampling and Radionuclide and Chlorinated Hydrocarbon Analysis in Newark Bay and the Hackensack and Passaic Rivers, Bopp et al.

Concentration obtained from analysis of discrete core sections corresponding to the cesium-137 peak.

Total DDT represents the sum of two of the three 4,4' isomers (DDD and DDT).

Surface concentrations are from a depth of 0 to <1 foot



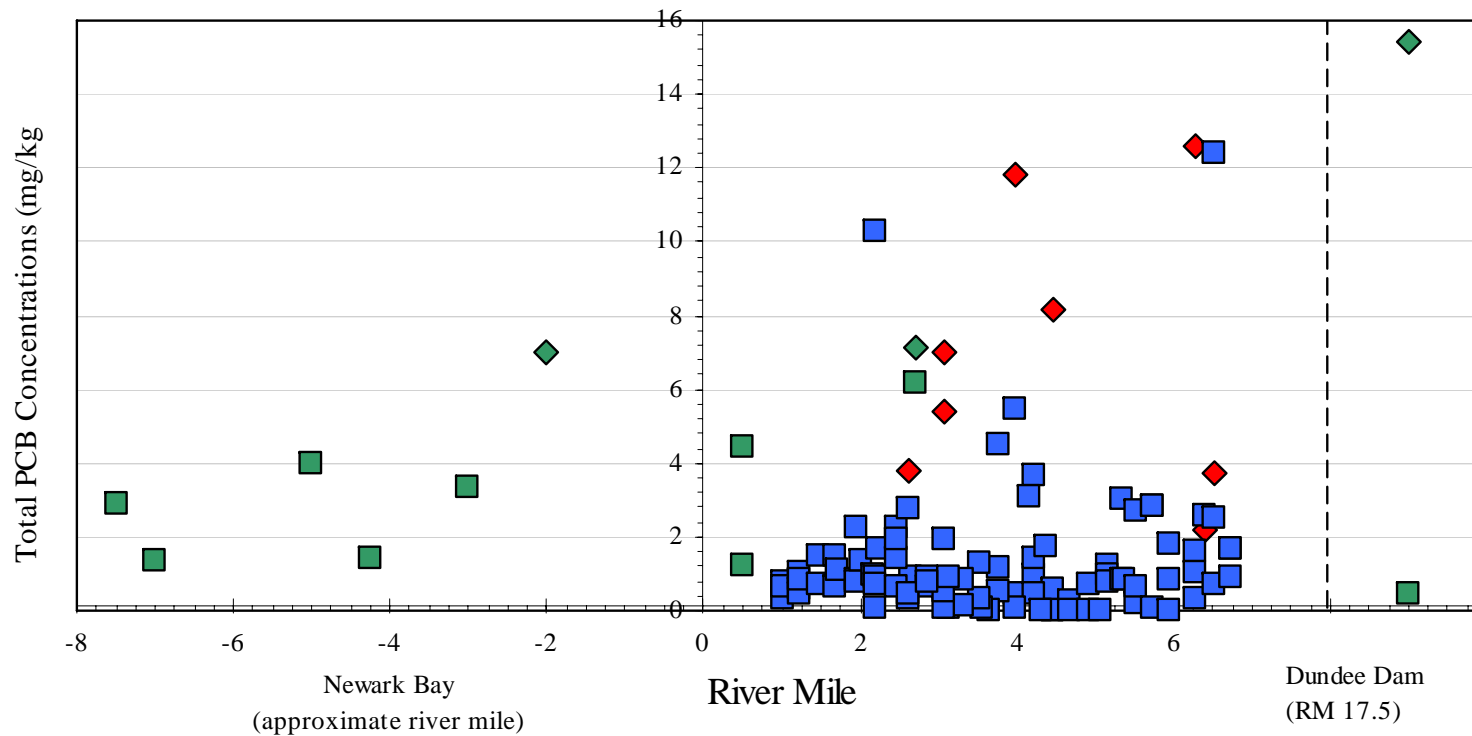
## Comparison of Total DDT Concentrations in 1963, 1985, 1986, and 1995

*Lower Passaic River Restoration Project*

Figure 13-35f

September 2008





#### Legend

- ◆ Tierra Solutions, Inc (1963)
- Tierra Solutions, Inc. (1995)
- ◆ Bopp et al., 1991a (1963)
- Bopp et al., 1991a (1985-1986)

#### Location

#### Notes

**Tierra Solutions Inc. Data Source:**  
PASSAIC 1995 RI Sampling Program (14 of the 95 locations),  
Tierra Solutions, Inc.

Interpolated concentrations  
calculated at the depth  
corresponding to the cesium-137  
peak

Non-detect (lab qualifier containing  
a U) plotted as half the reported  
detection limit

Total PCB values are the sum of  
Aroclors 1248, 1254, and 1260

**Bopp et al., 1991a Data Source:**  
Sediment Sampling and  
Radionuclide and Chlorinated  
Hydrocarbon Analysis in Newark  
Bay and the Hackensack and  
Passaic Rivers, Bopp et al.

Concentration obtained from  
analysis of discrete core sections  
corresponding to the cesium-137  
peak.

Total PCB concentrations are the  
sum of Aroclors 1242 and 1254.



## Comparison of Total PCB Concentrations in 1963, 1985, 1986, and 1995

*Lower Passaic River Restoration Project*

Figure 13-35g

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